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## The Well of Truth.

MRS. CALLOW has stepped into the field of battle, and has called upon all and sundry to engage in deadly combat! We join with Mr. Thomas in expressing the admiration due to a lady of courage. She will find many who are ready to take issue, but precious few who are prepared to go the full extent of her ideals. Personally, we might go part way, and having got there we should rest content, knowing well that we had reached the limits of practical politics.

Mrs. Callow is a scientist of the "pure" school, and as such is imbued with an abnormally developed instinct of scientific enquiry—she is for ever digging at the bottom of the "well of truth," and it is an extremely lonely task. Few of us have this urge to seek out "absolute" truth, and still fewer of us have the courage to bring to the surface what we find. Work of this kind leads to many interesting discoveries, and they frequently provide strong journalistic meat for the man-in-the-street; but do they do much in the way of promoting satisfactory relations between, in this particular instance, the food manufacturer and the consumer?

## Psychoanalysis.

It is clearly evident that Mrs. Callow is, to use an Americanism, a "single-track" person. She drives far ahead into the wilderness along a straight and narrow path and, in doing so, fails to take account of what lies to the right and left. Mrs. Callow has a single aim and purpose; she has a single idea which has become an obsession; all other considerations—and there are many—are subservient, and are either totally ignored or else ruthlessly scrapped. Extremists are useful in their way, but they are apt to wreck any complex and nicely balanced structure upon which they choose to make an onslaught. Things are not so simple and straightforward as Mrs. Callow would have us believe; if they were, the present-day manufacturer of foods would have a simple job on hand. He would be in the same boat as a manufacturer of pure drugs and chemicals—once the plant is set up and the standards defined it is all plain sailing. It is easy to turn out so many gallons or pounds a day of a substance having a simple chemical constitution and definite physical properties from similar materials—especially when there is little competition and a satisfactory price is readily obtained; and the purer the product the less the competition and the higher the price.

## The Price of Purity.

Purity has to be paid for; Mrs. Callow seems to have ignored that point. She forgets two other facts—foods are not simple, chemical substances, neither are they made out of such; also, arguments based on what can be done in the laboratory and kitchen are not applicable to the factory. The scientist is out for fundamental facts, and he or she occasionally indulges in visualising an idealistic concept, but there is a wide gulf between this and what is practicable under conditions such as exist in this sadly imperfect world of ours. The manufacturer is out to make a profit—in the great majority of cases a perfectly legitimate profit, of course. Also, in the great majority of cases the margin of profit is a narrow one. He cannot introduce elaborate plant and processes in a wild-goose chase after chemical purity without courting bankruptcy; on the other hand, he cannot afford to deceive or dissatisfy his customers or the authorities. These and many other considerations give him a very short length of rope to play with. There are, as in every other walk in life, exceptions—but their career is usually brief. We leave Mrs. Callow to the experts to take up the particular cases she has cited; to our mind, the chief weakness in her contention lies in the fact that she has omitted to take account of economic considerations.

**Quality.**

Once more we cast our eye over Mrs. Callow's article. What an extraordinary crop of contentious points she has raised! How one can wander round and round in verbal controversy over those intangible words, "pure" and "quality"! There is no fixed, definite standard of reference; indeed, how can there be? We repeat the perfectly obvious fact that foodstuffs are not simple substances, or even mixtures of these, having definite and invariable compositions and characteristics. That being so, how can these designations, "pure" and "quality," be anything more than vague and variable, lying somewhere between certain arbitrary limits set by the general consensus of popular opinion presided over by watchful medicals and governed by fluctuating economic factors?

Writing in FOOD MANUFACTURE recently, a well-known cereal chemist held that the ultimate criterion of quality in flour, considered as a raw material, must be the quality of the loaf it will produce. Quality in cheese was the subject of another paper in these columns, the author showing that the conception of quality differed rather widely with several types of cheese. Only a short time ago it was suggested by a distinguished contemporary (*The Journal of the Society of Chemical Industry*) that the superior quality of English fruits is due to their comparative slowness in ripening.

**Definition.**

It was implied by the above-mentioned authority that the first problem of any enquiry into this question of quality in food is that of definition, and it was suggested that science can contribute much towards this end. We wonder how much! No doubt science can contribute something towards a clearer understanding of what is implied by the use of the word "quality" in relation to foodstuffs, but it would seem that there can never be anything of the nature of a hard and fast definition; there are too many variables, including the human factor, involved.

**Labelling.**

In a recent paper by Dr. Ainsworth Mitchell, the editor of the *Analyst*, dealing with food adulteration and its prevention (*Police Journal*, 2, 8), the conclusion is reached, after an examination of the position with regard to butter, margarine, milk, jam, lemon cheese etc., that many of the charges under the Food and Drugs Act at the present time involve questions of correct description and labelling rather than adulteration of the older kind. This is where Mrs. Callow is on firm ground; but, in our opinion, she goes too far beyond what is possible in actual practice.

**Adulteration.**

Dr. Mitchell shows that the control of the food supply of the country by means of chemical analysis has become increasingly complex. The work of Hassall and the other early public analysts was relatively simple, for, as has been pointed out, the processes of adulteration were crude and unscientific, and the materials first used for the purpose were easy to discover. The detection of the addition of alum or gypsum to bread, for instance, or of the substitution of chicory for coffee, or sloe leaves for tea, presented little difficulty and occupied but little time; and the scientific adulterator had not yet arisen to devise methods of baffling the conclusions to be drawn from the data furnished by chemical analysis. *Each fresh advance in analytical methods has been countered by corresponding applications of scientific knowledge on the part of the adulterator.* His aim has been to make a product which shall be on the border line between a genuine article of poor quality and an adulterated article which might often conceivably be genuine. An analyst may often have strong suspicions that a food is adulterated and yet, owing to the naturally wide variations in the composition of the pure product, may be unable to bring definite evidence that the sample is not genuine.

**Fiddle-faddle.**

If, as it appears, an attempt at the definition of "quality" is to claim the intelligent consideration of chemists, they might at least be spared the agony of defining "truth"; but Mrs. Callow plies the rod unmercifully.

"*What is Truth?*" *asked Pilate, and none could answer him.* Since then no additional light appears to have been shed on the subject, beyond some bright person discovering that "*Truth is Stranger than Fiction.*" The Mad Hatter assured the March Hare that "what he said three times was true." Keats saw Truth in the beauty of a Grecian urn; Mr. Thomas believes it to be found at the bottom of wells; Mrs. Callow would like to see it stand out bold on the label of a jam-jar. Who knows where this meddling with metaphysics is going to lead us? What if the maker of jams, addicted to Pirandello, should label his goods—

FINEST QUALITY

STRAWBERRY JAM

*And that's the truth if you think it is.*

Then suppose a dissatisfied buyer explained to the grocer that for finest quality jam she doesn't think much of it, and the tradesman replied, "Madam, there is nothing good or bad, but thinking makes it so," what would be the position? "The Selling Price of Truth" in this case would probably be nil;

any ordinary customer would want her money back, and the intellectual grocer would be out of business in a week.

### A New Food.

During our recent visit to the United States we frequently expressed astonishment at the number of people who flitted about from one hotel to another, apparently spending most of their time in bedrooms and bathrooms, and it was not until we happened to come across a note in the *Commerce Reports* of September 16 entitled—

FOODSTUFFS

THE SOAP TRADE OF THE UNITED STATES

that the mystery was solved. Now, it appears that even the Government is becoming alarmed at the consumption of soap. It will be interesting to observe what effect a mixed diet of soap and bad liquor will have on the American race. We would like to ask of William Springett if the joyful anticipation depicted in the face of the gentleman who is preparing "A Pan of Fudge" is in any way connected with this new movement in dietetics.

### Preserving Fruit Juices.

Dr. Ayers and his associates are investigating the possibilities of a new process for preserving the original fresh-fruit flavour in fruit juices. Briefly stated, the method is to inoculate the juice with selected pure cultures, then sealing in a vacuum and allowing it to stand for a predetermined period before pasteurisation, during which period there occurs a further reduction of the available oxygen. The process has not yet been tried on a commercial basis.

### Norwegian Oil.

Measures have been drafted in Norway to control the quality of medicinal fish liver oil produced in that country. The Ministry of Commerce is to lay down detailed regulations concerning the plant and premises, as well as the treatment of the fish liver and the sale of the oil.

### Citrus Pectin.

In a foreword to a reprint of Dr. Sucha-Ripa's article which appeared in the October FOOD MANUFACTURE, the editor of the *Braunschweigische Konserven Zeitung* makes the following comment:

"In view of the extreme importance of the pectin discussion at the present time and the unusual interest of Dr. Sucha-Ripa's article, we did not feel justified in withholding any part of it from our readers. Although the article was written at the request of FOOD MANUFACTURE, and with special reference to English conditions at a time when the authorities are on the eve of issuing regulations governing the use of pectin, there is much that is new to German readers, especially the discussion of citrus pectin. It is particularly noteworthy that in England they do not disdain to invite even foreign opinion on a subject on which it is proposed to legislate."

### Oysters in Packets.

We note that the Birdseye Quick Freezing Process, recently acquired by General Foods Corporation (formerly Postum Company, Inc.), will be extended to the marketing of oysters, permitting them to be nationally distributed in package form. Does this mean that we shall be able to get a packet of oysters from a slot machine?

### Frozen Yeast.

German chemists have found that yeast frozen at $-10°$ to $-25°$ for upwards of ninety-six hours and subsequently thawed by being stored for twenty-four hours either at room temperature or at 5° shows little change in its properties.

Experiments showed that the stability and nitrogen content were unaltered, but there was a slight increase in the time taken for the fermentation of dough by the yeast which had been thawed at 5°. The water content was lower than that of the normal years. Although in biological appearance the frozen and normal yeasts were identical, the former yielded the very slight increase of less than 1 per cent. in the number of dead cells.

Also, it has been found that no marked difference exists in the crude protein contents of normal and frozen wheat. The crude gluten is decreased only if the moisture on freezing is greater than 44 to 46 per cent. The amino-nitrogen content of frosted wheat is high. The reducing sugar content of frosted wheat is above the normal value, particularly if the wheat is immature when frosted.

### Ethylene "Ripening"

The use of ethylene gas in colouring fruits, which is widely used for citrus fruits and which has been extended to a number of other fruits and vegetables with varying success, does not increase the food supply—that is, the starch or sugar content—after the fruit is harvested. The experiments of investigators in the United States Department of Agriculture with the ethylene gas process lead them to think that the changes produced by it are very similar to those which take place naturally after the fruit or vegetable has been harvested and stored under proper conditions. If an orange is picked when immature and before the fruit has stored sufficient sugar, ethylene gas will not add to the sugar or reduce the

acid, but it does promote a colouring of the rind that makes otherwise desirable fruit more attractive to the eye. In no case, however, does ethylene gas cause a half-grown immature fruit to be made palatable.

### American Amalgamations.

Giant American amalgamations of food manufacturing and merchandising concerns are reported to be under way, with enormous capital at their disposal.

So far these food groups have not reached into the meat industry, although there is the possibility of one manufacturer of meat products, as well as a great cheese concern, being included.

In recent mergers there seems to be a strong trend toward the inclusion of a large *number* of foods or food products, rather than enlargement within a single field.

For instance, in each of several great companies formed there are included coffee, flour, baking powder, confectionery, chocolate, mayonnaise, etc., but there is no move to include all the baking powder producers in one great concern, or all the coffee companies, or all the mayonnaise companies into one company for the handling of these separate lines.

### Rationalisation.

This gives a distinct advantage in many ways. If one salesman can sell a large number of products at each call, and one delivery can be made for as many products, there is a material reduction in the cost of distribution. Similarly in the executive of such organisations there is possibility for great economies.

In the retail field it is the "food store" that is becoming increasingly popular in America. Even old-established retail meat dealers are finding it necessary to add other foods to their stock.

Grocery stores, whether independently owned or in "chains," are feeling the necessity for the addition of meat departments, either to keep their grocery trade or to increase their general sales. The specialty store still has a place, but not so large as it once enjoyed.

### Honey.

In a moist atmosphere honey may absorb water, becoming sufficiently dilute to permit the growth of yeasts. Unripe or improperly cured honey contains an excessive amount of water and tends to become fermented. Comb honey loses and absorbs water very readily. Fabian and Quinet give the critical moisture point for fermentation as 21 per cent. Honey may be pasteurised at 62·5 degrees in thirty minutes.

### Those Bankers.

We have never been particularly partial to bankers; they are distant, unsympathetic people at the best of times. But one of our American friends goes to the extent of putting them in the same class as poisonous swamp growths and other evil things of the night. "It is up to each individual to make his choice of the road he will follow. One leads upward and requires energetic climbing, but it comes to the Promised Land. The other leads downward and seems easy to follow, but it ends in a swamp where night-blooming bankers, receivers, and sheriffs have attained a luxuriant and noxious growth."

The inference seems to be: avoid late suppers when your overdraft is big. It is bad enough during the day, without being torn asunder at night in those unlovely swamps by a treacherous gang of bankers and receivers!

### New Sterilisation Method.

It seems possible that a new process for treating water, based on the sterilising action of dissolved metals and developed by Dr. Krause (*cf. Chem. Z.*, April 10), may have some significance in the food industry. Silver is used, and this is deposited by a special process on supporting material, over which the water to be sterilised is passed. Minute quantities of the metal dissolve, but even at such low concentrations all bacteria are destroyed, and the water acquires a resistance to subsequent infection. The process is readily adapted for such purposes as the purification of drinking water. It is claimed that the activity of the silver is not impaired by the impurities usually present in water, that it is independent of temperature, and that the apparatus requires no attention.

### Soft Drinks.

Scotland has always been looked upon as "darkest Africa" by that soft-footed gentleman of feline propensities from U.S.A. And yet the American Consul at Edinburgh reports that soft drinks have grown rapidly in popularity among the Scots.

We are told that soft drinks date back to the time when King Tut refreshed himself with spicy, fruit-flavoured beverages and Cleopatra dissolved a pearl in a glass of wine. The discovery of carborated beverages as we know them to-day is attributed to Speakman, who is described as a "canny Yankee." A certain Dr. Physick—marvellous name!—suggested to Speakman the idea of introducing carbon dioxide into plain water. The results were so gratifying that the doctor prescribed the carbonated water for his patients. Speakman then improved on the original idea by introducing fruit flavours into the carbonated water in order to make it more palatable—and thus the modern form of drink was born.

# The Problem of Conveyance in the Food Factory

## Some Methods of Achieving Continuous Flow

*Insistent demands of low-cost production experts for time and labour-saving devices have resulted in a crop of sound ideas for the solution of internal handling problems; ideas which food manufacturers have not been slow to adapt to individual needs.*

THE MAN who makes motor-cars and the man who makes slab-cake have at least this in common about their job, in that the parts which go to make up their respective products undergo innumerable long or short journeys from hand to hand, from department to department, before the finished article is ready for the market. It is obvious, of course, that these journeys add nothing to the value or quality of the goods. The car does not travel more miles per gallon of petrol merely because, in making the engine, an operative laboriously "lugged" the sump casting from one set of milling machines to another. Nor does the cake taste any the richer because three men were employed getting the barrels of egg-yolk across the yard when, with the right handling equipment, one man could have done it.

When one comes to think of it, the business of producing any saleable product from the raw material is just one continuous process of *moving*, getting stuff from one point to another.

Often the speed and economy with which this moving from place to place is performed is the keynote of many successful modern businesses. Long ago they realised that man-handling is a costly, profit-killing mode of moving material about the works. Labour expended on moving material even a few feet was money "down the sink," when suitable mechanical means to do the moving could be had, and the time spent in "handling" turned to the more profitable business of getting on with actual production.

Nowadays, among wide-awake concerns, it is no longer the rule to buy lifting and shifting gear in a haphazard fashion, regardless of its effect on the organisation as a whole. Each new proposal for the speeding up of one department of the factory is con-

FIG. 1.

FIG. 2.

FIG. 3.

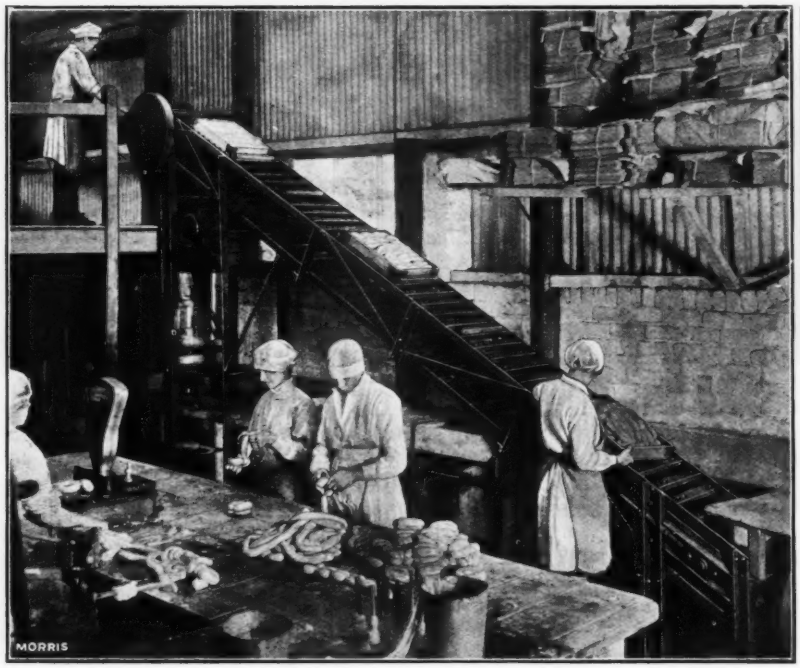



FIG. 4.

FIG. 5.

sidered in the light of its relation to the needs of the other inter-dependent departments. Thus the ideal of a "continuous flow" from the receipt of the raw material to the despatch of the finished product is put into practical form so far as the arrangement of the premises will permit.

Figs. 1, 2, and 3 show a classic example of co-operation between trade and transport. The fruit merchant has premises immediately below the railway station. Fig. 1 shows how the bunches of bananas are unloaded on the siding directly on to a lowering device, which takes them down smoothly to the ripening rooms below. Here the bunches are transferred to a chain-driven overhead runway situated alongside the ripening rooms. Damage to the fruit, the bugbear of the banana merchant, is reduced to a minimum, and step-saving is an accomplished fact.

A word about the runway itself. It is really a form of conveyor, consisting of a chain whose two ends are joined so that it moves endlessly along the underside of the track. Attached to the chain at regular intervals are trolleys bearing hooks, from which various articles may be suspended. The conveyor may pass round curves to follow a passageway, it may rise to pass over obstacles or to carry its load to upper floors, or it may descend to permit of some operations being performed on the load.

A still more popular type of conveyor is that illustrated in Fig. 4. You see a corner of a small sausage factory, and trays of sausage being conveyed from the "linkers" to the cold store on an upper floor by way of the moving belt of wood slats in the background. Before the advent of the conveyor each full tray had to be carried upstairs by the girls, necessitating some 500 journeys per day. All that unproductive work was removed at a stroke in return for a modest initial outlay.

The same design of conveyor handling bags of sugar is seen in Fig 5.

An interesting conveyor for handling cases of empty and full bottles is shown in Figs. 6 and 7. In Fig. 6 the lorry has arrived with a load of empties, which are being unloaded direct on to a continuous elevator leading from the ground floor, connecting with the first floor, and terminating in washing and filling departments on the top floor. Fig. 7 is a view of the bottle-washing department.

One or two features about this elevator are worthy of note. Not only does it elevate the empties, but by pressing a button it can be made to lower the full boxes. A set of buttons, "Stop," "Up," "Down," are provided on each floor within easy reach of the person loading or unloading.

Here, as in the other types described, a continuous chain is employed, or, rather, two parallel endless

FIG. 6.

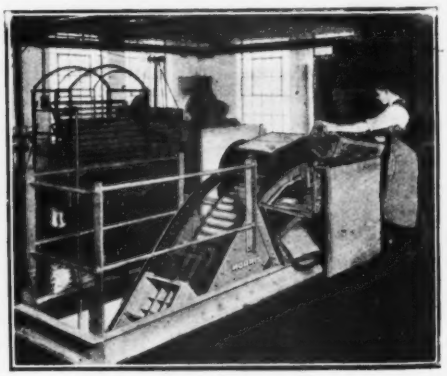


FIG. 7.

chains connected at intervals by a crossbar whose function is to push the boxes up an incline. The latter is made especially smooth to insure a minimum of wear to the boxes.

An ingenious conveyor and elevator is illustrated in Fig. 8, where cylindrical tin boxes destined to contain soup are seen coming from the box-making machines, being caught up by an elevator, whence they roll on an inclined plane to the filling department. In this case the elevator is a canvas belt, having projecting "shelves" travelling in a vertical shaft formed by a steel channel and the belt itself. An automatic feed at the base of this shaft allows each "shelf" to take one tin at a time.

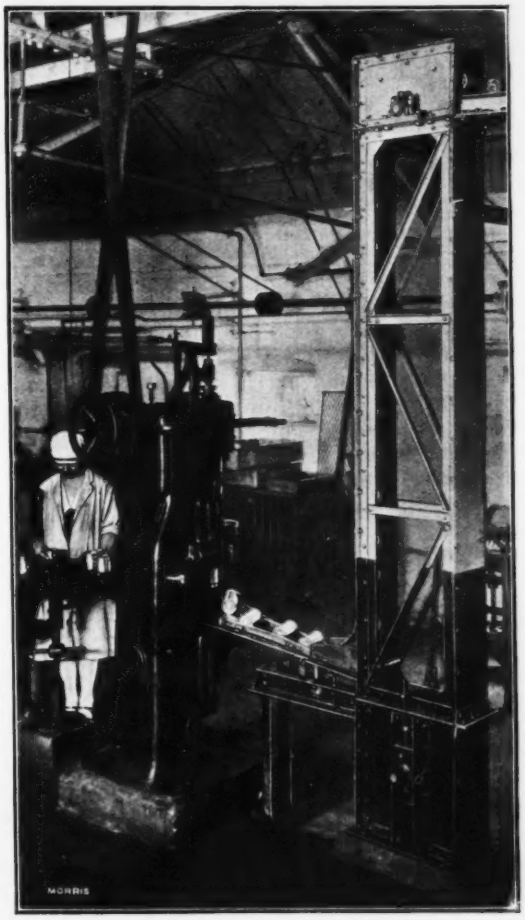



FIG. 8.

Dairies have found conveyors a splendid help in keeping their products moving. The milk churns in Fig. 9 are travelling by gravity direct from the dray. The gravity type is perhaps the most common form of conveyor since no power is needed for its operation and it can be readily moved from place to place as required. It can be fixed permanently in the ceiling or on the floor. Many works are equipped from end to end with this type of conveyor, which, if properly planned, keeps materials flowing steadily in a smooth and effortless way.

FIG. 9.

The overhead runway, a single steel track attached to the ceiling, having junctions and by-passes and carrying trolleys from which pulley-blocks are suspended, is to be found in almost every trade and industry. Sometimes one needs a few short lengths, though in Lancashire cotton mills one sees miles of this "ceiling highway."

An example of a runway applied to a bacon factory is shown in Figs. 10 and 11. Washed hams are hung on to the runway for transport to the drying room (Fig. 11). It will be noticed that while there is but one track leading in and out of the drying room, there are half a dozen tracks in the room itself. The trolleys are shunted on to the several tracks from the single line by means of a short traversing track.

So far runways dealt with require some form of skilled erection, but that illustrated in Fig. 12 handling pork can be bought "off the shelf" and can be

FIG. 10.

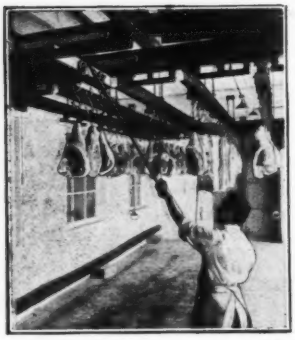


FIG. 11

erected by an intelligent handy-man with the aid of a few common tools. It is mainly intended for loads up to 10 cwts., the various turntables, switches, hangers, and trolleys being installed as separate units. By reason of its low cost, ease of erection, and adaptability, it is becoming increasingly popular in factories where the conditions do not warrant the installation of its more expansive prototype.

We are indebted to Messrs. Herbert Morris, Ltd., of Loughborough, for permission to reproduce the accompanying illustrations.

FIG. 12.

# Real Factory Costs

By FRED. GROVE-PALMER, A.I.C.

FACTORY COSTINGS, especially in some of the smaller organisations, are often based upon what is really mere guesswork, and may lead to continued loss of money.

The boiler house may be taken as a typical example; there a very old installation may be doing fairly good work and the owners may be satisfied that their fuel expenditure of 7 or 8 per cent. of the factory expenses is reasonable, but when they learn that other people have the figure down to 3 or 4 per cent., they become alarmed and try to improve. Eventually, by the advice of experts, the whole thing is scrapped in favour of a modern installation and immediately the profits go up.

This may apply equally to all departments.

## Objective Criticism Needed.

A costing system that is only partly correct leads to fixing fictitious prices and "paper" profits; proper costing demands the attention of experts, as may be seen by studying the habits of the greater businesses. An outside specialist may often be able to do more good than the man who has been with the company all his life; he has no prejudices and no preconceived ideas of "what ought to be."

A costing system should not be peculiar; if it follows normal lines, comparisons with other people's figures are made easy. The expert should be allowed a free hand for his inquiries; the so-called "Secret Process" is often the worst money-waster; this should be thrown open for inspection and possible modernisation. A responsible man is not likely to betray his employers' secrets.

Costing may be looked upon as the one way of finding out where the factory working may be improved and how successful policies can be shaped. Without correct costing, managements soon cease to function.

## "Balance" Sheets.

The balance sheet is often more remarkable for what it hides than what it tells, but costs supply the information for proper control, though it is often found that a system that has grown up gradually is too complicated and does not reveal the facts sufficiently clearly. Huge masses of details compiled by a large staff do not necessarily imply a good costing system. If the factory output is up to the demand at a price properly related to the selling price, the system is good; if it gives the busy manager a reply to his queries as to output, price, and market trends, and this without his searching for additional facts, the system is a very good one. It helps the executive and pleases the auditors.

If business is not what it should be the manager will be able to put his finger on the spot that is preventing successful competition. Many a new industry is hampered by injudicious costing charges; these should be more equably distributed.

Costing and accounting may well be combined in small businesses, though they are actually separate departments. The information supplied should include prime costs, factory overheads, total plant costs, selling cost, and cost of administration; this latter may be divided into operating or producing, preparatory, and service. The figures should be based upon the unit that is usual in the trade; this aids comparisons.

## The Role of Costing Expert.

It is always advisable for the costing department to keep in friendly touch with the factory people; this is greatly assisted by the appearance of the costing expert at all meetings of the works committee; he is able to explain matters and so remove suspicions that certain departments are being forced to shoulder more than their fair share of the expenses. Each departmental chief should get a copy of the figures for his own section and all obscure points should be clearly explained. Experience has shown this to have an excellent effect, and it enables the manager to spur up the defaulters without hurting the feelings of the rest.

A bad report calls for an inquest, but a good one should not be passed unstudied; the improvements in one place may lead to similar betterment in others.

The price of a good costing system need not be much higher than that of a poor one, but its value is enormous, and good work can often be done better by a small staff than one which is unwieldy.

# The Selling Price of Truth

By A. BARBARA CALLOW, M.A., M.Sc., M.S.,
*Author of "Food and Health."*

*Below we print a provocative article by an eminent scientific authority on foodstuffs. This article raises several more or less ethical questions relating to quality and labelling. "Is it not time," she says, "that manufacturers began to realise the selling price of truth?" Two replies are given on another page.*

## Coffee Essence.

"WANTED: Makers of a coffee essence produced from chicory, oats, or anything other than the coffee bean." This delightful advertisement was not taken from the pages of *Punch*, but actually appeared in a recent number of the highly respectable journal known as FOOD MANUFACTURE. You notice that the advertiser does not seem to mind what the essence contains so long as it has absolutely no coffee. He simply cannot endure the idea of a coffee essence that is made from coffee. It would be interesting to know what he would call such a synthetic coffee essence if he put it on the market. I wonder if it would be labelled: "Best pure coffee essence; guaranteed to contain no trace of coffee." Or would it be simply "Coffee essence," leaving it to the consumer to decide what that means? A mere housewife might possibly be so stupid or old-fashioned as to imagine that it was made from coffee, and, indeed, that no ingredient other than coffee was used in its manufacture. To the food manufacturer apparently coffee essence can contain almost anything. The name is evidently not supposed to bear any relation to the materials used. How do food manufacturers justify this kind of thing? Perhaps they do not try to justify it.

## Salad Cream.

A year ago a similar inquiry in this journal met with a crushing reply. In this case the advertiser said he wanted to make a good salad cream, quality being more important than price. After raising our hopes in this way, he went on to say that he would prefer using dried milk to fresh, and did not want to use eggs unless it was essential! He also suggested using citric acid, acetic acid, and gum tragacanth. The answer to this inquiry appeared in the following month's issue of FOOD MANUFACTURE: "Your correspondent apparently wishes to use tragacanth in place of eggs, citric acid for lemon juice, acetic acid for vinegar, and dried milk for fresh. It would appear that the excellence of the product, for which your correspondent longs, will be one of appearance rather than composition." Doubtless, our coffee essence friend will receive a similar rebuke.

Salad cream without eggs, coffee essence without coffee: are these typical of manufactured foods? Let us hope that they are not typical. Let us hope that there is at least a trace of coffee in our coffee essence, and a suspicion of egg-yolk in our salad cream. It is, perhaps, too optimistic to hope that our coffee essence contains nothing but coffee, and that our salad cream contains nothing more than we put into home-made salad cream. Food manufacturers seem to have a distressing way of making their products very nearly right, but not quite.

## Raspberry Jam.

Take, for instance, jam. In an article on the subject of commercial jam manufacture published in this journal in August, 1927, it was stated that when making strawberry or raspberry jam it is advisable to increase the natural pectin content of the fruit by adding either commercial pectin made from apples, or by putting in extra supplies of pectin in the form of gooseberry juice. Here is a food manufacturer who openly recommends the addition of apple pectin or gooseberry juice to a product which is supposed to be strawberry or raspberry jam. To the housewife this suggestion is preposterous. If jam manufacturers cannot induce strawberry or raspberry jam to set without adding apple pectin or gooseberry juice, it is time for them to go into the kitchen and ask the cook for the recipe for home-made strawberry or raspberry jam. I willingly admit that some home-made strawberry jam is not a very good colour, and some does not set particularly well, but this is not the case with really good home-made strawberry jam; and almost any good housewife can make excellent raspberry jam of clear red colour which sets perfectly and has good keeping qualities. There is absolutely no difficulty in making raspberry jam which sets without the addition of extra pectin, and which tastes of raspberries, which is more than can be said of most of the products on the market that go by the name of raspberry jam.

All manufacturers cannot, of course, be classed together. There are some whose jams are altogether delicious, but, alas, there are many firms which produce a very poor commodity. Why do these manufacturers persist in spoiling good raspberries by adding apple pectin or gooseberry juice? If they take equal weights of fresh, good raspberries and clean preserving sugar they can prepare raspberry jam which will be worth buying. By the way, when apple pectin or gooseberry juice is added, is this fact mentioned on the label? Or does the label simply state, "Made from the finest fruits and pure sugar only." I have never seen jam labelled "Raspberry jam diluted with apple pectin," or "Raspberry jam diluted with gooseberry juice" in spite of the fact that I have often tasted commercial so-called rasp-

berry jam which was certainly not made only of raspberries and sugar.

### Expensive Water.

If a manufacturer cannot make raspberry jam set without adding extra supplies of pectin, it is fairly clear that he has added water to the fruit. Why should housewives be expected to pay large sums for added water masquerading as manufactured food? She can usually obtain all the water she requires at a reasonable price from the local supply. Jam is by no means the only watered foodstuff. Bread is often an offender, and who has not met the butter which drips when it is cut and splashes when it is made into pats? Commercially cured meats frequently contain more water than those cured at home.

Water is by no means the only extraneous substance that is cleverly incorporated with manufactured foods. Another example of dilution is that of cereals which are sometimes put in potted meats. We saw recently in this journal that Mr. C. H. Manley (Leeds City Analyst) reported that certain potted meats contain an unduly large percentage of starch in the form of rice or breadcrumbs. I am glad to say that he added the rider that he considers that there should be no starch at all in potted meat. I heartily agree. Why should the housewife be deluded into thinking she is spending her money on potted meat when she is really buying a mixture of potted meat and rice or breadcrumbs? What justification have manufacturers for selling potted meat diluted with these substances? Once again I plead for honest labelling. If the public are to buy potted meat mixed with rice, let it be labelled " Potted meat mixed with rice."

### Do Improvers Improve?

An important point in this connection is the reason why substitutes are added to manufactured foods. Do manufacturers add rice or breadcrumbs to potted meat in order to improve the nutritive qualities of the product or to improve their own profits? How many of these extra additions to food make it any better for the consumer? We read a good deal nowadays about " improvers " for flour. Is the flour really improved from the nutritive point of view? I should like to know about this, because, as far as I can see, the only difference is that " improvers " make a small loaf into a big loaf. Is this an improvement from the housewife's standpoint? In view of the decreasing size of modern houses, and especially of modern kitchens, it would seem to be a distinct disadvantage to have a large " improved" loaf instead of a smaller " unimproved " loaf, which contains the same amount of flour. Perhaps I have not grasped the true significance of " improvers." Is their great importance in the trade due to the fact that they enable bread to hold more water than would otherwise be the case?

### The Physiologist's Verdict.

Are the needs of the consumer sufficiently considered when new methods of food manufacture are introduced? Chemists are greatly in demand for suggesting and preparing new and cheaper ingredients for manufactured foods, but are these additions always biologically justifiable? Should not physiologists, also, be consulted as to the possible effect of the manufactured food on the human body? If this were invariably done, it is possible that some products now consumed would never enter the market at all.

A case in point was mentioned by Dr. Georges Schaeffer and his colleagues in a paper which recently appeared in the *Journal of Hygiene*. These investigators, who work in the Institute of Physiology at the University of Strasbourg, give " a precise example of the social dangers to which we are exposed through daily use of products which have no justification from the physiological point of view, but only mean slight economy of time to cooks and housekeepers." The commodity which they consider unfit for human consumption is a special type of baking powder which is at present in use in the U.S.A. The objectionable ingredient of this baking powder is alum, which is used as a cheap substitute for potassium bitartrate, etc. The baking powder is composed of acid calcium phosphate, alum, and sodium bicarbonate. When in contact with water, carbon dioxide is evolved and aluminium phosphate is precipitated. The introduction of soluble aluminium salts is not allowed in any kind of food, but since the soluble alum gives rise to insoluble aluminium phosphate it has found its way into much of the baking powder which is on the market in the United States. In fact, nearly two-thirds of the total amount of baking powder consumed in the U.S.A. (which amounts to several thousands of tons a year) contains alum. This practice is prohibited by law in most European countries, but is at present allowable in the U.S.A. According to Dr. Schaeffer, alum should never be allowed as an ingredient of baking powder because, although the resulting aluminium phosphate is insoluble in water, it is easily dissolved in the concentration of hydrochloric acid present in gastric juice. After carrying out a large number of feeding experiments, the Strasbourg physiologists have come to the conclusion that there are serious physiological objections to the presence of aluminium phosphate in foodstuffs. Here is a clear case of a substance which, from a chemical point of view, appears to be innocuous (because of its insolubility), but which is highly undesirable from the physiological point of view. The moral is, obviously, that any new type of food substitute should be tested physiologically as well as chemically before being included in a nation's dietary.

### Real versus Spurious.

One hopeful piece of news regarding food substitutes is that there is a deliberate attempt being made by the Californian Fruit Products Laboratory to use real fruit instead of imitation fruit in beverages. Synthetic beverages are becoming increasingly popular, and many imitation fruit drinks are now on the market. In the United States alone, eight thousand million bottles of carbonated drinks

(*Continued on p.* 322.)

# The Well of Truth

By F. E. THOMAS, M.A., A.I.C.,
*Editor of the "Arkady Review."*

*A spirited reply to the preceding article on "The Selling Price of Truth."*

TRUTH LIES in a well, we are told, and Mrs. Barbara Callow, whose diverting article on another page we have been privileged to see, must certainly spend a lot of time down wells,because she seems to have developed a strong liking for truth and would like to see it as a concrete fact rather than the abstraction that it usually is. One must beware, however, lest enthusiasm lead one to frenzy, and this it may well do. The writer knows a girl to whom truth is such a passion that when on one occasion she was asked by a friend for her opinion on a hat, she replied, "I don't like the hat and I think you look *awful* in it," with consequences, needless to say, that were dreadful.

## Nothing but the Truth.

One must not be extreme, however, and I do not suppose Mrs. Callow would go to an extreme of this kind, though we imagine that when she returns an analysis with a figure of 21·37 per cent. of, say, magnesium sulphate, she repeats it several times to make sure it is not 21·36 or 21·38 per cent. Obviously only one of these three sets of figures can be correct, and the others—pooh-pooh it though you may—are falsehoods and untruths. Nor can we imagine that there ever appears on one of her analyses that vile subterfuge "Silica, by difference," or words and materials to that effect.

With a great deal of what Mrs. Callow has to say one is in agreement, but she rather overstates her case, and in one instance—on the question of bread improvers—she definitely asks for information, saying that perhaps she has not grasped the true significance of "improvers." We quite agree—she has not. Apart from this particular paragraph, however, which we will enlarge on later, it seems to us that we may be able to put forward some considerations based on the point of view of the manufacturers, who have not an easy task to perform in supplying the demand of the various classes of housewife, and it may be possible to convince readers—and among them, one hopes, Mrs. Callow—that manufacturers are not really the sinks of iniquity that one might imagine them after reading her article.

## The Problem of Definition.

To begin with a very important and widely spread feature of foodstuffs, the cheapening of foods by admixtures—*e.g.*, of breadcrumbs to potted meat—this is due in the main to two causes. Firstly, there is a terrible lack of definition in our foodstuffs. We need only recall the famous "sardine" controversy to realise this. If, further, a manufacturer cares to make up a mixture of sugar, fat other than cocoa butter, oil-cake residues of some kind, and about 1 per cent. cacao, he can call it chocolate. Again, what percentage of meat must there be in a jar to justify its being called "potted meat"? Tea, also, is not necessarily an infusion of the leaves of *Thea chinensis*—the leaves of the camomile and lime-tree are frequently used, to mention only a few. Coffee essence is a fairly vague term, and no doubt would lead many people to imply that the coffee bean had been used in its preparation, though it may be that it is merely meant to denote an essence with a coffee flavour, just as there are many vanilla and strawberry jellies that would not recognise a vanilla pod or a strawberry if they saw them.

The second point is that it is necessary to provide cheap foods for people, *either because they cannot or will not pay more for good foods*, and, in the majority of cases, housewives have an *amour propre* (*anglicé*, snobbishness) which would prevent them buying such cheap foods if they were properly labelled, although in nearly every case the housewife *must* realise that if she is paying a low price for such things as jam and coffee essence, the market price of the ingredients of which she knows quite well, she cannot be getting the best or, if you like, purest food. It is not that the manufacturer wishes to deceive; it is that housewives do not like to be told the truth.

Very amusing are the lines about manufacturers going into the kitchen and asking the cook for the recipe for home-made jam, but home-made jams went out of fashion the same time as bearing babies: the cook knows how to mix cocktails; the housewife how to play golf, and not much about cooking. Mrs. Callow would have to hunt quite a while for her jam-making cook. As a matter of fact, on the point raised in this paragraph, it may be said there is a sound scientific reason for adding pectin to jams. It enables the jams to be made with less boiling, thus preserving the natural flavour of the fruit to a greater extent than if more boiling is used. It may result in a higher percentage of water in the finished product, but additional flavour is surely a good compensation. Dr. Sucha-Ripa's important contribution to these pages recently completely disposes of Mrs. Callow's objections on this score.

## Water in Bread.

This question of water is one which deserves further discussion, however. Mrs. Callow complained of bread being an offender in this respect. She may not mean that bread completely without water is the object to be aimed at, but it may interest her to know that this charge cannot be levelled with justice, if the main idea is to obtain a nutritious, easily digested food. Rather is the boot on the other leg. *The trouble is that one cannot*

*get enough water in bread to enable all the starch to gelatinise, and only when this occurs can bread be said to be in the best condition for digestion.* This fact is shown very clearly in the case of cottage bread which is made into a "tight" dough, containing less water than a "tin" dough, which can be made softer owing to the fact that when made into pieces for baking the tins offer a support to the dough and prevent it running. In most cottage loaves will be found dry particles of starch which have been unaffected by water, and which will normally pass through and out of the system before being completely digested to the point at which they can be absorbed into the system. The best loaf from the point of view of nutritive value is the one in which the flour has absorbed its maximum of water.

### Do Improvers Improve?

From bread to flour improvers is an easy stage. Mrs. Callow's remarks raise far too many points to answer adequately in the limits of my space, and she really should study some book on the subject, but I cannot without comment pass over the following: "Is their great importance in the trade due to the fact that they enable bread to hold more water than would otherwise be the case?"—a remark worthy of the daily Press in all its dictatorial ignorance! I looked confidently in the next paragraph for a remark about the wickedness of bakers supplying white bread instead of the wholesome brown, but was—happily—disappointed.

The reasons, briefly, for the use of improvers in breadmaking are (1) the deficiencies of Nature, (2) the demand for a cheap loaf. Mother Nature unfortunately does not supply a wheat berry from which it is possible to extract all the flour without including a certain amount of indigestible foreign matter which most bakers do not want, and as the majority of the public want "best" bread, most bakers require "best" flour, which should mean flour of low extraction. If this were done universally it would mean that the yield of breadmaking flour per ton of wheat would be small and the remainder would go into the offals. The price of flour and bread would go up enormously. By extracting a higher percentage of this flour and dividing the extract into fractions, it is possible to blend flour into different grades, the very best of which do not require an improver of any kind. The medium grades do not, however, make the best loaf possible from the flour without the addition of some "improver" or other, which helps to get the flour into the best condition for breadmaking. A poor or medium flour, even with an improver, will never make as good a loaf as a "tip-top" flour without one, but very few firms use only "tip-top" flour. The use of improvers, then, enables a higher percentage of the flour extracted from the berry to be made suitable for the making of good bread, and keeps the price of bread down.

### The Truth about Improvers.

As regards the question of the "large improved" loaf, the housewife alone is to blame for wanting a bold, upstanding loaf, though her instinct is right here, for a "sad," settled loaf is far less digestible than the loaf of good volume. A good, strong, bread-making flour will always give a bold loaf when properly handled. Inasmuch as improvers assist developing the gluten of second-grade flours, they are responsible for a bold loaf, but that is all. If the public wanted "sad" loaves they could have them; all that would happen would be that improvers would disappear and the millers and bakers would both rejoice. I would close the question of improvers enabling the flour to hold more water by calling attention to the recent Departmental Committee which fully considered the whole question of allowing improvers in bread, the findings of which should satisfy Mrs. Callow.

I have, I am afraid, discussed the article mainly in a spirit of levity, in keeping with its general tone, but, I hope, not unkindly. Where, in my opinion, Mrs. Callow has been wrong is in blaming the manufacturer. We are told, and it is on the whole true, that the people get the government they deserve. It is equally true, if not more so, that they get the food they deserve. The average housewife (our author may be pardoned for not knowing this) expects too much for her money. As a rule, she doesn't like to pay fivepence for a thing unless she believes it to be worth sixpence. She knows nothing about manufacturing costs and believes all manufacturers to be profiteers; she likes to buy cheaply and persuade her friends she pays top prices; if things are the slightest bit damaged and not in perfect condition she expects them replaced free of charge, and makes no allowance for foodstuffs being perishable, which induces the manufacturer to adopt methods which will enable her to keep up this attitude of spuriousness. The trouble is that no one yet has had the courage to tell the public this. Mrs. Callow is obviously a lady of courage. Will she take on the job?

(*Continued from p.* 320.)

are consumed annually, of which about half are made from artificial fruit essences. The irony of the situation is that the American fruit growers actually have a considerable surplus of fresh fruit which is now wasted. Professor Cruess and his colleagues at the University of Berkeley, California, intend to alter this state of affairs. They have already made a protest against the use of artificial colouring matter and flavouring materal for imitation fruit drinks, and they are devising methods that should greatly increase the use of fresh fruit in America's most popular dessert—namely, ice-cream.

It will certainly be a great advantage to the consumer if real fruit juices are used instead of synthetic ones. The taste will undoubtedly be superior, and there will always be the sporting chance that some vitamins may escape the process of manufacture. Anyone who has tasted a strawberry ice made from real strawberry juice knows that it is very much more delicious than the usual variety of strawberry ice, which is strawberry in name but not in flavour. Here, again, is an example of a misleading name for a manufactured food. Is it not time that manufacturers began to realise the selling price of truth?

# Standards for Jams

By ALBERT E. PARKES, F.I.C.,
*Public Analyst.*

*The following article discusses the points raised in an article on "The Feasibility of Standardising Jam Products," by J. W. Black, which we published in the August issue. There is now general agreement on the desirability of adopting some form of standardisation of jams, and the sooner this is done the better. The object of standards is to maintain our best products at the same high peak of quality, to protect these against unfair competition from cheaper products, and to protect the public against misdescription either in labelling or advertisement. It is, however, important to appreciate that the problems of the manufacturer and the housewife are not the same. Reference should be made to Mr. Black's article for suggestions as to the principles which might be laid down as a basis of specific regulations or standards.*

THE QUESTION of the adoption of standards for jams has been dealt with in a very able and interesting manner by J. W. Black, whose views on the subject are entitled to the respect due to an expert (FOOD MANUFACTURE, 1929, 227). It is one which is of particular interest, and has been under discussion on several occasions amongst analysts and manufacturers, some of whom are considered as regarding it as of too great importance. The consumer, who should be the one most concerned, is probably the least interested in the composition, considering quality, especially palatability, as the only standard necessary.

While agreeing with Black generally as to the desirability of the standards, the writer is not at all sure that it will be possible to maintain and enforce the standards if fixed and adopted.

There are two ways of defining jams—they may be considered as conserves of sound, ripe fruit preserved with sugars, or as concentrated sugar syrups flavoured with ripe fruit.

The products should be of a satisfactory consistency and pleasing to the eye and palate, which qualities it is possible to obtain by the use of fruit and sugar only in their manufacture.

The consistency, which depends on the strength of the fruit gel, will vary with three factors—the nature and quality of the fruit, the proportion of fruit or fruits in the mixture, and the care employed in the process of manufacture.

Some fruits naturally lend themselves to successful jam manufacture; others do not, or, at the most, are not so suitable, but owing to particular flavour or other characteristics can be satisfactorily employed in a mixture.

Quality and flavour in fruits are factors which cannot be determined by analysis, and changes produced by cooking may entirely destroy these original conditions.

There are three possible standards for the constituents of jams which may be suggested as desirable for adoption—the amount and variety of the sugars, the amount of soluble and insoluble solids, and the amount and variety of fruit or fruit juices.

The accurate determination of the sugars and solids offers no difficulties to the experienced analyst. It is otherwise with the determination of the fruit or fruit juices. To determine these with any approach to accuracy is a problem still remaining to be solved.

The constituents of fruits generally—such as sugars, acids, pectin, and fibre, particularly those which determine their suitability or otherwise for jam-making—can be identified and determined by analysis, and these form a rough basis for the indirect estimation of the amount of fruit in the finished jam.

Microscopically the tissues of some fruits, such as black currant, raspberry, gooseberry, apple, etc., have characteristics which enable them to be identified, but the fruit juices, with a few exceptions, are chemically almost identical.

The variations in the composition of fruits of the same variety are quite as wide as the differences between varieties (Lampitt and Hughes, *Analyst*, 1928, 32); consequently, any estimate of the amount of fruit based on that of the fruit constituents present is liable to be far from accurate.

Leaving out the question of added thickeners or substitutes, which may justly be regarded as adulterants, the successful manufacturer, who has the quality of the finished product in view and who values the reputation of his goods, generally knows from experience the correct amount of fruit of any particular variety or quality which can be used to give the desired result, and has no wish nor sees any necessity for the imposition of standards for the amount of fruit in jams, the keeping qualities and the satisfaction of the consuming public being his ultimate aims.

If manufacturers, in order to protect themselves from what they regard as unfair competition, consider that standards are desirable, let them, in the interests of their own industry, fix reasonable standards, and analysts generally will endeavour to support them with their skill and ability.

If standards for fruit-content are ultimately fixed and adopted it will necessitate a different one for most varieties of jams, and reasonably low ones, having regard to the variations in the composition of fruits. It is doubtful if our knowledge is at present sufficiently advanced to enable this to be done. They would undoubtedly be difficult to prove and probably lead to troublesome disputes. Much more research work is necessary and the present cumbersome and inaccurate methods of analysis need to be considerably improved and simplified.

# The Ultra-Violet Irradiation of Food Products

*One of the most dramatic advances in the history of Biological Science, and, according to the Medical Research Council, the most important in its immediate results, was the discovery that irradiated ergosterol possessed the anti-rachitic principle vitamin D. It should not be overlooked, however, that grossly excessive amounts of irradiated ergosterol interfere with calcium metabolism.*

ERGOSTEROL IS practically the pro-vitamin D. That is to say, after its activation by irradiation, its esential property, vitamin D, appears an important and newly traced principle.

Cereal foods are, in a sense, decapitated for our use. It is supposed that during their growth in the sun, they are endowed with vitality which leaves them, in part or wholly, when they are cut and harvested. Professor Bosé has proved that food and certain plants possess, while living, a nervous energy not altogether dissimilar from that found in animals. That being so, in most cases, it is necessary that the loss, or exhaustion, of that vital energy should be replaced by the incorporation of food in which it either remains or is regenerated, as it may be by means of irradiation of suitable character.

Ergosterol is the organic equivalent of radium in the physical sphere. But whereas the first-named, owing to its disconnection from sources of vegetative life, does not manifest the powers inherent within it, the second substance, not having been interfered with, retains it. If ergosterol be submitted to the infusing energisation of U.V.L. it gains—or probably regains—the factor known as vitamin D, which the Steenbock process, especially, has established.

This ergosterol abounds in rye ergots, mushrooms, yeast, and similar cryptogams. The fact that *all* fungi feed only on organic matter (parasites on living forms; saprophytes on decomposing kinds) is enlightening to biologists, since it shows that this material is a kind of refined vital essence. It is thus easily obtained in considerable abundance.

Ergosterol is a potent constituent of cholesterol, itself a valuable element of the brain, nerves, blood, bile, and skin. The latter, when isolated, is a non-saponifiable, waxy fat; almost unique in organic development. The lack of cholesterolic-ergosterol in the human organs is responsible for the occurrence of certain ailments, themselves often obliterated, and usually reduced in intensity, after periodical exposures to U.V.L., which generates vitamin D in the tissues—viz., ergosterol.

FIG. 1

The science of actinology has come to stay; and its branch actinotherapy has proved its curative value. Food manufacturers must confirm its *creative* value. One can best speak of ergosterol and its infused, or generated, vitamin D by comparing it with copper-wire. This is always metal, but by sending a current of electricity through it it becomes charged with energy without altering its appearance. So, too, vitamin D, by being developed in ergosterol, endows it with an invisible yet effective vitality.

Extracted ergosterol is a very fine-grained, white, tasteless, non-odorous powder. It melts at a high temperature into an oil of thick consistence, which crystallises *as it cools* very beautifully and definitely, as shown in Fig. 1. As it sets firmly, and dries into a brittle horny substance, the mass of particles appear as shown in Fig. 2.

**Processing.**

Storing up vitamin D in cereal foods by subjecting them to the action of ultra-violet rays, thus enabling both children and adults to utilise calcium, or lime, for developing and repairing bone, tooth and tissue structure, is recently announced in the United States. Three large mills of a well-known concern manufacturing breakfast foods have installed equipment for this purpose, and a part of the cereal production of these mills undergoes the beneficial treatment.

On endless belt conveyors, arranged in moving-step formation, the milled wheat, steamed and thoroughly sterilised, is fed in a thin layer on broad moving belts which pass slowly under the vitalising glow of mercury quartz vapour lamps. Before moving into the influence of the invisible rays the grain has just its ordinary properties; a short distance beyond, although unchanged in appearance, it contains a supply of the anti-rachitic vitamin.

The additional equipment for irradiating or raying the grain is very simple, consisting of suitably designed lights energised by electricity furnished by standard motor generator sets.

The dependence of human health on the properly balanced assimilation of calcium and phosphorus is increasingly recognised to-day, and the part which vitamin D plays in the utilisation and retention of these minerals is more and more evident. Without this vitamin, or its correlated agent in ultra-violet light, such minerals are only retained and utilised by the body with difficulty. The growing child requires

a liberal supply of calcium and phosphorus in available form to develop bones and teeth. Children have rickets and rachitic tendencies in just that degree in which they are unable to assimilate and use these necessary minerals.

The normal, healthy adult has need of calcium and phosphorus in available form for repairing tissue, too, and recent research has found evidence of a decreased resistance to various ailments as a result of a deficiency of vitamin D in the adult. It is said that this new way of irradiating cereal foods is one of the comparatively few ways of correcting this deficiency in child and adult diet.

The cereal company in question makes it clear, however, that it is not seeking to substitute irradiated cereals for sunlight, cod-liver oil, or other vitamin D agencies. The new foods are offered simply as one more source of this element.

There is no change in the appearance or flavour of the rayed cereal. The first irradiated cereal is wheat farina. It can be used exactly in the same way as before. It renders possible the effective use, by the body, of the rich calcium content of milk. Instead of using milk to make a better food out of cereals, the irradiated cereal can now be used to make a better food out of milk or cream. Muffets, a ready-for-table cereal, is also now being irradiated.

The discovery of the vitalising power of ultra-violet light was an accident. In 1901, Dr. Peter Cooper Hewitt, in his New York laboratory, found that when electricity passed through the vapour of mercury in a glass tube, it caused a brilliant light. But the trouble was that, as soon as full brilliance was forced, the glass tube heated and became molten. To overcome this defect, Dr. Hewitt made a more heat-resistant tube of quartz, the common mineral known as rock crystal. This led to unexpected results.

Operators of the lamp became severely sunburned. Then it was discovered that quartz was a super-transmitter of ultra-violet rays.

Many tests of the properties, effects, storage, etc., of commercially irradiated cereal foods have been made in the laboratory of the University of Wisconsin by Professor Steenbock. Groups of dogs, litter mates, were kept in darkness and fed on the same nutrient ration in every respect, except that the cereal fed to one group was irradiated. The dogs living on the unirradiated ration developed rickets in a very pronounced degree, while those in the other group grew quite normally in the darkness and were healthy in every respect.

The apparatus used in the irradiation of milk consist of a specially fused quartz tube which is filled with certain inert gases through which a high tension electrical discharge is maintained. The effect of this discharge is to produce a radiation rich in ultra-violet, which, on account of the

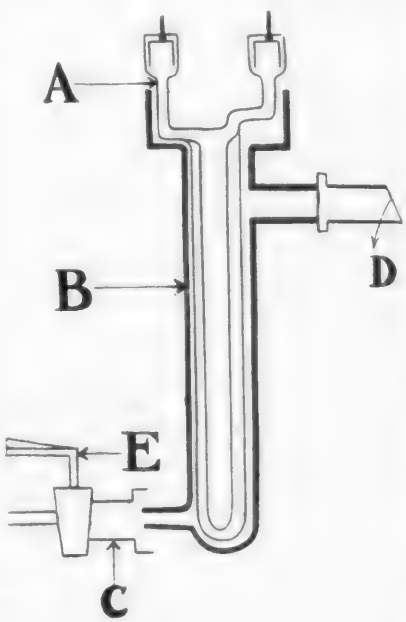


FIG. 2

transparency of the quartz to ultra-violet rays, is transmitted to the liquid under treatment.

As seen in the diagram, there is a quartz tube A surrounded by a metal jacket B, which is open at the top and is provided with an inlet C, and an outlet D. The liquid to be irradiated passes round the quartz tube in the form of a thin concentric film, the whole of which is subjected to the action of the rays from the moment it enters the bottom of the jacket until it leaves through the upper outlet D. An inlet cock E is provided so as to control the rate of flow of the liquid. By this means the period of irradiation can be regulated. The metal jacket can be removed for cleaning purposes, and the quartz tube has been constructed so that it, too, can be thoroughly cleaned and sterilised when desired.

The high tension discharge is obtained from a transformer, and the terminals of the transformer are connected directly to the electrodes in the quartz tube. The total power consumption is very small, being about 250 watts for a single unit apparatus. The whole of the apparatus, apart, of course, from the electricity supply plant, is contained in a small glass-doored cupboard. The milk is run from an ordinary receiver between the quartz tube and an outer glass tube, and so to the bottling machine in a continuous process at the rate of twenty-five gallons an hour. The time required for exposure is a few seconds only, the process is continuous, and there is no appreciable rise in temperature. Sterilisation is effected through the fact that ultra-violet rays are lethal to all bacteria. The expense of irradiating milk by this process is almost negligible, and such milk is now being produced on a commercial scale by several "clean milk" dairies.

# Lacquered Cans: A Reply to Dr. Kohman

By A. LL. MATTHISON

I HAVE read Dr. Kohman's letter in your October issue and beg to make the following observations.

The statements I made in the August issue, and on which Dr. Kohman comments, were the results of practical tests made with British tinplate, British-grown fruit, British-made lacquer, and British canning conditions. Dr. Kohman's evidence is based on American conditions in each respect.

Anything I contribute to this discussion is from the lacquer manufacturer's point of view. I know what lacquer, given the best possible conditions, will do.

As to the results obtained in the canning industry either at home or abroad, I can only accept the evidence available second-hand, although at home I naturally have opportunities of getting into closer contact with the practical side of canning.

I am aware that doctors and scientists in the canning industry differ quite as much as in the medical profession. In such cases the plain man must use his own common sense and work out his own salvation. Now, there is a difference of opinion between American and British scientists as to the proportion of hydrogen-swells in this country as against America. On this point my opinion is no doubt valueless, and I gladly retire, leaving the scientists to fight their own battle. It is only right to point out, however, that English canners are agreed that any trouble they have from hydrogen-swells is negligible in their packs. It is true that America packs millions of cans to our thousands, but percentage is the final proof.

On my own ground, however, I beg to remain in the ring, and in reply to Dr. Kohman, again assert that corrosion troubles in lacquered (enamelled) cans are intensified very considerably by faulty methods of can making, faulty lacquering, or the use of unsuitable lacquer.

I am willing to concede Dr. Kohman one point; I will amend my former statement "entirely due" to "almost entirely." The better the lacquer and the methods of lacquering, the less the trouble from corrosion. Double lacquered cans give a much smaller percentage of wasters than single lacquered cans, a high grade lacquer less than a poor grade. Improved methods of can making, lacquering conditions and packing again reduce the percentage of swells.

Dr. Kohman also takes exception to the following statements of mine:

(*a*) ". . . It is a well-known fact, however, that fruit canners in America are much more troubled with hydrogen-swells than English fruit canners."

(*b*) "Much of the foreign fruit and tomatoes is packed in unlacquered cans, and the contents cannot be compared with British packs for colour or flavour."

(*c*) "Now the vast majority of English fruit canners use a lacquered can, which partly explains the difference. . . ."

As to (*a*), this is what I am told by British scientists, and, as I have said, I retire from this phase of the discussion. (*b*) This is a matter of fact, but Dr. Kohman obviously assumes that by the word "foreign" I allude only to American. I do not. I refer to all foreign countries importing into Great Britain, and I reiterate that English packs of fruit are superior in colour and flavour to any foreign importations. Let my readers compare Chivers', Cotswold Canners', Smedley's, Deakin's, Wye Valley Products, and other well-known British brands with imported fruits and judge for themselves. (*c*) It is perfectly true that the vast majority of English fruit canners use lacquered cans, including the above-mentioned firms, and I submit that this partly explains the difference referred to.

I was careful to say "partly" explains the superiority of colour and flavour. Other causes are probably our soil, climate, and methods of cultivation, and the fact that our fruit canners do not dope their packs with heavy syrups as many foreign canners do.

The flavour of English canned strawberries, damsons, loganberries, raspberries, and black currants is, I claim, unequalled by any other country in the world.

Apart from any natural advantages which the English fruit grower may have, I claim that his methods of canning play an important part in the superiority of his pack, and quite possibly the lacquer he uses renders definite assistance.

There is also the difference between American and British tinplate which must be taken into consideration. Until evidence has been accumulated on all these points the final word cannot be said.

I have often been told that British tinplate is superior for fruit canning purposes to American, and although English plate could be improved, I have no reason to doubt this.

Dr. Kohman's statement that "Without a single exception, all fruits give rise to more prompt formation of hydrogen springers and swells and perforations when canned in enamelled cans than they would if canned in cans made of similar tinplate, but not enamelled," may be correct under American conditions. There is no evidence, however, to apply this statement to British conditions.

Even in America, surely, it is a fact, as here, that double lacquered (enamelled) cans give a smaller percentage of wasters than single lacquered cans? Surely, then, it is very largely a question of the use of high-grade lacquers, correct methods of cleaning plate, and the right application and stoving of lacquers which largely determines the percentage of swells, corrosions, etc.

Dr. Kohman, I feel, would not on reflection assert that there is no difference between a badly lacquered can and a properly lacquered one in their liability to

(*Continued on p.* 337.)

# Recipes for Christmas Fare

By J. BOYD

A CHRISTMAS dinner, be it ever so meagre, would indeed be a poor affair if plum pudding were omitted from the menu.

During the years of strife 1914-19, this fact was realised by the authorities at home, and they did their best under the circumstances then prevailing when they issued to the troops in Flanders tinned plum pudding—and very fine it was. Opinion differs as to what constitutes a real plum pudding; at any rate, all are agreed that the ingredients must be of the very best.

Several recipes will be given here and readers can have their choice as to which one will suit them best.

## Plum Pudding.

*No.* 1.

3 lbs. bread crumbs
1 lb. strong flour
2½ lbs. sugar (soft)
2 lbs. minced suet
16 eggs
3 lbs. sultanas
1½ lbs. currants
1 lb. orange and lemon peel minced
½ oz. salt
1 oz. carbonate of soda
1 oz. cream of tartar
2 ozs. ground cinnamon
2 ozs. ground ginger
1 glass brandy
½ glass rum

Mix all well together. Add a little sweet milk if necessary. Scale at weights required, 1 lb., 2 lbs., etc. Place each pudding in a double sheet of tough grease-proof paper (the paper to be previously damped slightly and dusted with flour). Fold in corners of paper, tie round with string, allow space for swelling, and place the puddings in a vessel containing boiling water; keep boiling and add water at same temperature if required during the cooking process; 1 lb. puddings will require 2½ hours boiling at least, the other proportionate to weight. When cooked, remove from water and suspend from hooks or nails fixed at a convenient height in a dry corner of the cooking establishment. Next day the paper should be dry, when the outer sheet is best removed. The puddings are then suspended from hooks in a cool, dry place till required. Each pudding should have its own space—that is, must not touch the one next to it.

To prepare the puddings for sale, enclose each one in a large sheet of white tough grease-proof paper. Tie with coloured ribbon and have the corners of paper brought to peak form high above the centre of pudding. A piece of holly is usually fixed to the ribbon. This practice of cooking in paper in preference to bowls is much used with various firms doing a large trade in this food.

*No.* 2.

2 lbs. bread crumbs
1 lb. strong flour
2 lbs. sugar
1½ lbs. suet minced
12 eggs
2 lbs. sultanas
2½ lbs. currants
2 lbs. mixed peel
½ oz. salt
2 ozs. baking-powder
2 ozs. mixed spice
1 oz. ground cinnamon
2 glasses rum
¾ pint sweet milk

*Method:* Same as for No. 1.

*No.* 3

3 lbs. bread crumbs
1 lb. patent flour
1½lbs. soft flour
12 ozs. sugar
12 ozs. mixed peel
12 ozs. suet, minced
2 lbs. sultanas
2 lbs. currants
½ oz. mixed spice
Pinch of salt
1 lb. chopped apples
1 lb. muscatels, stoned
½ lb. cherries, chopped
¼ lb. preserved ginger, chopped
8 ozs. flaked almonds
6 eggs
¼ pint milk
1 oz. coffee essence
Rind of 1 orange and 1 lemon, chopped very fine
½ glass brandy
1 glass rum

Provided all the materials have been accurately weighed and measured, thoroughly doughed or mixed together and well boiled, this turns out a very fine pudding. Scale at required weights and cook in bowls. A piece of grease-proof paper securely fastened on top to prevent steam getting at contents of bowls.

## Christmas Pie-Meat.

*No.* 1.

5 lbs. minced suet
5 lbs. sultanas
5 lbs. fresh apples (before paring)
5 lbs. currants

2½ lbs. sugar, soft
2 lbs. macaroons
6 ozs. orange peel, minced
6 ozs. lemon peel, minced
6 ozs. citron peel, minced
7 ozs. mixed spice
4 glasses of sherry wine
4 glasses of brandy

With the exception of suet, sugar, macaroons, spice, and wines, pass all through the mincer; then mix the whole of the ingredients together on the slab. Store in wooden boxes lined with grease-proof paper. Cover well up to prevent any impurities getting at the meat and store in cool place for at least six weeks when possible.

Meat made this way will keep fresh for twelve months.

This is about the most expensive recipe one could use for Christmas pies, and where best prices prevail for the finished pie this recipe is recommended.

The macaroons referred to in the recipe are made from—

1 lb. ground unblanched almonds
1 lb. sugar
6 ozs. whites or dissolved albumin

Mix all together on slab. Drop on to greased and dusted baking tins in rough form with the hand. Bake well in cool oven till dry. When cold, break the macaroons with a rolling-pin, place in clean vessel, saturate with all the wine. Allow to lie overnight, when the macaroons should be quite soft.

To some readers this may appear to be a lot of trouble, but the resulting "meat" is well worth it.

To make the pies roll the meat in ball form, not too large. Place on a round of puff paste that has been cut with a fluted or crinkled cutter; wet edges of paste with egg, cover with a similar piece of paste, fasten both around edges by slight pressure. Make three cuts with knife on top paste, wash with egg, and bake in a good hot oven till ready. During the baking process the paste should rise evenly to a good height. The cuts in centre will expand, thus showing contents of pies to purchasers.

With the advent of electric bakeries, where the baking is done in full view of the public, all the appetising odours emanating from the goods being baked in the electric ovens are wafted out to the street. I can visualise a great rush for Christmas pies when they are baked as above.

*No. 2.*

3 lbs. minced suet
4½ lbs. currants
2 lbs. sultanas
1 lb. apples
1 lb. mixed peel
½ lb. sugar
½ oz. ground nutmeg
¼ oz. ground cloves
¼ oz. ground ginger
½ oz. ground cinnamon
2 glasses of rum

Prepared and mixed as for No. 1.

**Puff Paste for Pies.**

3 lbs. strong flour
3 lbs. paste butter

Chop butter roughly into the flour and make into a slack dough with half water and buttermilk. Place in a cool place overnight. Next day give the paste three full turns on slab at intervals, according to time on hand. A less costly paste may be made by using pastry margarine in place of butter. By using the margarine you often get a more bulky looking pie. For flavour nothing equals butter.

**Christmas Cake.**

4 lbs. butter
4 lbs. sugar (Demerara)
4 pints eggs
8 lbs. currants
4 lbs. sultanas
1 lb. preserved ginger, cut small
1 lb. glacé pineapple, cut small
½ lb. flaked almonds
6¾ lbs. soft flour
4 ozs. patent flour

Prepare in the customary manner. Cream butter and sugar, beat in eggs, add fruit and mix in flour. This makes three large cakes. Bake in a good oven. When ready the cakes may be sold by the pound as they are or covered with almond icing and a layer of royal icing spread over the surface on top.

For almond icing take—

7 lbs. sugar
1 lb. glucose
1½ pints water
yellow colour (egg)
3¼ lbs. ground almonds
9 eggs, slightly beaten
½ glass orange flower water
¼ glass of rum

Boil sugar, water, and glucose to 245° F. on the sugar thermometer. Skim off any impurities that may arise during boiling process. When ready, remove from fire, add flavour and rum, stir in almonds, and when well mixed add the eggs. Give a thorough mix and pour on top of the cakes. Allow to set, then remove the cakes from the tins and strip off the papers.

## Various Cakes

**Glycerine.**

As in most other matters, opinions differ as to whether cakes made from the best materials require the addition of glycerine to improve them. In some quarters there appears to be an unholy prejudice against the inclusion of glycerine as an essential for good cake baking.

After a long experience in the making of all grades of cakes, and when I think of the firms who have used this improver for a long number of years and

still continue to do so, I unhesitatingly commend the use of glycerine for best cakes. (Cheaper-grade cakes I will deal with in some future article.)

By using glycerine in the recipes as given here the cakes will have a somewhat closer texture than usual, have a more velvet-like skin, better bloom, and will not go stale and crumbly during warm or very cold weather.

Customers like to see and have cakes that will cut with the minimum of crumb waste, and usually pay top price willingly for such a cake. When glycerine is used in cakes, even in the small proportions as shown in recipes, the colour of a good cake is inclined to be a little more brown inside when cut than would be the case where no glycerine is used. Now that is really not a fault, but is rather a distinction, as most first-class firms prefer such a coloured cake in preference to the white appearance of cheaper-grade cakes.

It is an undoubted fact that many of the lower-priced cakes beat the top-grade cakes for appearance, but that is all.

The recipes given here can be relied upon, as they have been in constant use for years and still give satisfaction. The quantities are small, suitable for hand beatings.

**Butter.**

The butter used for those cakes should possess good creaming properties and should have as little excess water and salt as possible.

**Eggs.**

As they are mainly responsible for the aerating of the cakes, care should be taken in the selecting of them, and hens' eggs are preferable to duck eggs. When frozen eggs are used they are best heated a little before being added to cake batter. Of course, when making up hand beatings, as given here, it is quite a simple matter to heat contents of mixing bowl at the mouth of the oven if there happens to be any tightening up of the batter due to coldness of the egg (fresh or frozen). Eggs should give all the aeration required in a good rich cake, yet with the addition of small quantities of patent flour, as given in recipes, the cakes are improved considerably. The acids in this flour act upon the gluten of the flour in cake batter, causing it to become more ductile and so to expand more easily in the oven. Eggs do not give off gas like soda and cream of tartar in a cake mixing; the aeration is obtained by the frothing of the whites whilst being beat into the butter and sugar.

The texture of the froth allows the froth to become practically permanent.

After the flour is mixed into the batter and the cake is put into the oven, the heat causes the air cells to expand, and thus the whole cake grows in volume. When the cake reaches about 144 or 145° F., the whites, or albumin, coagulate and hold the air generated, thus retaining the expanded form of cake.

The proteins in the yolks set in a similar fashion, but at a lower temperature, and become set in a much shorter time.

**Sugar.**

A good castor sugar of medium grain gives the best results; when a coarse grain is used, the cakes very often show spots on top skin after being baked —that is owing to the hard grains of sugar not having had time to become dissolved during the beating and baking process.

**Flour.**

Should be soft, of good colour, unless where otherwise specified.

**Fruit.**

Should be of the bright, fleshy variety and well cleaned; nothing looks more unsightly in a sultana cake of good quality than dark sultanas.

**Patent Flour.**

140 lbs. soft flour
2¼ lbs. carbonate of soda
4½ lbs. cream of tartar

The chemicals are first of all passed through a very fine sieve, then well mixed with the flour, the whole being passed through a sifting machine.

Keep in a dry position till required.

Failing a machine, the old hand method of passing several times through a flour sieve gives satisfactory results.

**1-6 lbs. Sultana Cake.**

*No. 1.*

1 lb. butter
1 oz. glycerine
1 lb. sugar
12 eggs, without shells
1¾ lbs. sultanas
1 lb. 11 ozs. soft flour
1 oz. patent flour

Cream butter, sugar and glycerine, add eggs gradually till all are well beaten in, then mix about 6 ozs. of the flour with batter, give a thorough beating; add the well-cleaned fruit, and, lastly, the remainder of the flour, mix well, but do not toughen the mixture; place in a papered tin, spread level on top, and bake in a nice moderate oven. No definite temperature for oven can be given, as different styles of ovens require different temperatures.

Experience is the best teacher for this kind of work, as in most lines.

*No. 2.*

2¼ lbs. butter
2¼ lbs. sugar
3¼ lbs. eggs without shells
3½ lbs. soft flour
2 ozs. cornflour
¼ oz. powder
4½ lbs. sultanas
3 ozs. ground almonds
2 ozs. glycerine

Powder is made up of 3 ozs. cream of tartar and 2 ozs. carbonate of soda.

*No. 1 Sultana Cake* is made on the butter-beating system.

*No. 2 Sultana Cake* is flour-batter system—*i.e.*, cream the butter with 2¼ lbs. of the flour. Beat the sugar and eggs in machine, as for sponges. When both are ready, add the beaten eggs and sugar to the butter and flour gradually, beating them well together; when both are incorporated proceed as for No. 1.

### 1-7 lbs. Plum Cake.

1 lb. butter
1 lb. sugar
12 eggs
1 oz. glycerine
1 lb. currants
1 lb. sultanas
1 lb. 11 ozs. soft flour
1 oz. patent flour
4 ozs. each orange, lemon and citron peel

Proceed as for No. 1 Sultana.

### 1-6 lbs. Currant Cake.

Same as for No. 1 sultana, currants in place of sultanas. There are several firms who make a successful speciality of this cake; the best of currants must be used to get the proper effect on cut cake.

### Mixed Fruit Cake.

1 lb. butter
1 lb. sugar
1 oz. glycerine
12 eggs
14 ozs. soft flour
14 ozs. strong flour
1 oz. patent flour
1½ lbs. cherries
5 ozs. sliced citron peel
Few drops of vanilla essence

*Method.*—Same as No. 1 Sultana. Sprinkle flaked almonds on top of cake before baking.

### Cherry Cake.

Same as for mixed fruit, without peel and with 2 lbs. cherries.

NOTE.—Cherries for all cakes should be small, of good colour, and as free from syrup as possible. If cherries should have a superabundance of syrup it is best to rub them with a clean damp cloth, afterwards being mixed with part of the flour that has been sealed for the cake.

There are special cherries prepared for cakes, and if they do cost a little more this is amply repaid when you think of the trouble avoided during a busy period.

When large cherries are used there is always a tendency for the man responsible for the job to add more flour than is given in stated mixings in an endeavour to prevent the cherries sinking, and at the same time avoiding trouble for himself.

### Rice Slab Cake (Best).

2¾ lbs. butter
3 lbs. sugar
2 ozs. glycerine
4¾ lbs. eggs in shells
3 lbs. soft flour
12 ozs. ground rice
8 ozs. patent flour

*Method.*—Similar to No. 1 Sultana.

### Plain Slab Cake (Cheap).

*No. 1.*

2¼ lbs. neutral fat
½ gill glycerine
1½ lbs. soft flour

To be creamed.

*No. 2.*

4½ lbs sugar
4½ pints sweet milk
1 oz. salt, egg colour
¼ oz. vanilla essence
10 drops essence of lemon
2 drachms ground mace

Mix all together; sugar must be thoroughly dissolved.

*No. 3.*

4 lbs. strong flour
3 lbs. soft flour
2 ozs. cream of tartar
1 oz. baking soda

Sift and mix well.

Add No. 2 and No. 3 to No. 1 gradually, mix well, and scale into papered tins.

Bake in good cake oven.

It is an advantage, when dealing with cheap mixings, if a suitable supply of steam is available for the ovens.

### The Editor

DR. H. B. CRONSHAW, B.A. (Cambridge), Ph.D. (Munich), A.I.C., is now back in the editorial chair after a three-months' visit to various parts of the United States and Canada.

* * *

THE *Sunday Pictorial* has issued a map-folder showing the distribution of its two million circulation, and explaining the advantages to retailers and others of Sunday advertising.

# Correspondence

*To the Editor.*

SIR,

While agreeing with the psychology of the author of "The Selling Price of Truth," I think Mrs. Callow would have been more just to the British manufacturer, and, incidentally, the public in general, had she generalised her admission, "Perhaps I have not grasped the true significance . . ." to the whole of her article instead of just applying it to flour.

To say that pectin is added to raspberry jam in order to load the jam with water is grossly unfair, besides being an absolute fallacy.

The pectin content of fruit varies not only with individual crops and degrees of ripeness, but its gel power decreases rapidly after the fruit is picked; so much so that when handling hundreds of tons it requires very careful scientific control on the part of the jam manufacturers to supply a consistent and reliable article to the public. And part of his effort to give the public the best, the manufacturer adds, when necessary, an amount of pectin to make up for any deficiency originating in the fruit. What is more, *he does* state it on his label if the pectin added is in excess of what the natural fruit should contain.

The alpha and omega of jam manufacture has yet to be found in a household cookery book. The making of twenty pounds of jam at home cannot be compared with a factory process involving tons. The home process allows the fruit to be purchased, delivered, and made up into jam within a few hours. To render this possible in a factory process it would mean the conscripting of all available labour between the ages of ten and seventy years, besides laying out an enormous factory which would only be utilised for about a fortnight of the year. This, in turn, would require a government who are past-masters at this communal method of conscripted labour, and elections will be won and lost on the one issue of "Added Pectin" or "Conscript Labour for Jam Factories."

Be this as it may, the manufacturers of jam—and of all edible products, for that matter—are overwhelmingly in the majority to give the public the best—a fact borne out in a statement of a past-president of the Society of Public Analysts, in which he said that the food of the country was never more pure and unadulterated than it is to-day, the proportion of samples reported as adulterated being less than 6 per cent., which figure is made up for the most part by incorrect description or mislabelling rather than actual adulteration.

Such a statement, based as it is on actual fact, is in itself sufficient answer to this article, and I would assure the author of "The Selling Price of Truth," with all due deference, that the facts in her article, *as relating to British goods*, are scarcely more numerous than the grains of wheat coming from the chaff exit of a threshing mill.

J. VALENTINE BACKES,
A.R.C.Sc., A.I.C.

# Answers to Enquiries

*Coffee Essence.*

65. Intelligently prepared, according to the following simple operations, a good product may be made:

Firstly, consult a coffee blender for the coffee blend, and use it freshly roasted and ground. If addition of chicory is desired, use about 50/50 of coffee and the chicory. If the water is hard, then add 1 oz. carb. soda to 24 gallons of water used.

Take—

| | |
|---|---|
| 64 lbs. ground coffee | 56 lbs. loaf or crystal sugar |
| 28 galls. water | 8¾ lbs. caramel colour |

Mix the coffee with 14 gallons of the water (boiling), cover, and keep warm for about two hours, strain, press, and stand aside. Reinfuse the "grounds" in the remaining 14 gallons of water (boiling) for one hour, then press and strain. Next, evaporate this second brew, so that when mixed with the first liquor stood aside, the two produce 10½ gallons. In this dissolve the sugar and the caramel. If desired, add 1 pint (20 fl. ozs) of strong Jamaica rum to each 7½ gallons of the finished coffee essence. It will preserve and add to the cherishing effect of the coffee. Some makers add rum essence instead of the rum (quantity according to strength of rum essence). Salt is an optional addition and is said to round off the flavour, also acts as a preservative, as does the Jamaica rum.

Fill into bottles whilst hot or warm, and as a precaution sterilise in the usual manner.

66 (3). A bakers' dough-mixer is, as you say, not a satisfactory means of mixing sausage meat, but a bakers' cake-mixer most decidedly is a great improvement over the old-type silent cutter.

The common practice is to put the meat through a mincer, called "breaking down," and then finish on a silent cutter. This method not only heats the meat far more than putting the meat through a mincer twice, but gives a finished product in texture like a tooth paste.

The mincer product is more granular and much more palatable than a silent cutter product.

The finest method of making sausages is to use the Peerless type cake machine, which is equipped with a mincer. The meat and rusk is passed through the mincer twice and then mixed with a meat paddle in the bowl of the mixer.

This method is common practice on the Continent, and has been so for a considerable number of years.

Attached is an illustration of the Peerless machine in question. I have no connection with the Peerless Company in any way, but admire them because with a wonderful machine they are waging a winning fight against intense foreign competition.

## Enquiry

71. We should be pleased if you could inform us if you know anyone who supplies machinery for wiring caps on bottled fruit.

## Milk Treatment.

Many attempts have been made to turn to commercial use the bacteria-destroying qualities of ultra-violet rays, more particularly in the sterilisation of milk. In Germany several milk depôts and dairies have been operating one system based on Dr. Scholl's invention. There is, however, some division of opinion among scientists as to the expediency of utilising the rays for the treatment of milk, at the present stage of development. So much so that the Minister of Interior in Saxony last year issued a statement to the effect that the problem of using for the nutrition of children milk which had been treated by ultra-violet rays was still unsolved. It was added that scientific investigations had gone to prove that in certain cases the treatment of milk by the new process had had an undesirable effect upon the valuable properties of the milk.

## Value in Waste Products.

During the Forestry Week held in Stockholm last March, Erik Hägglund, of Aabo, Finland, presented a very interesting paper on the chemical utilisation of waste products from sawmills and pulp and paper factories. In the sawmills, according to Hägglund, only about 51 per cent. of the log weight is utilised in the form of sawn materials, 44 per cent. being obtained in various waste products. At best, 24 per cent. can be utilised as chippings for sulphate cellulose; however, at present only 3 to 4 per cent. is used for this purpose. The remainder is used as a fuel for steam boilers or is simply going to waste. Among the possible ways of utilising the sawmill wastes, sugarification by hydrolysis is considered the most promising. The wood sugar can be used with advantage as cattle fodder. It is also possible to produce liquid fuel from wood waste by high-pressure hydrogenation.

The utilisation of the waste liquors from the cellulose factories is also of great importance. A remarkable development in this line is the production of pressed yeast from sulphite liquor. This process is likely to achieve importance if the product can be manufactured at a cost which makes it saleable as fodder yeast. A suitable mixture of fodder yeast and wood sugar might form a satisfactory substitute for fodder cakes. However, since only about 10 per cent. of the organic matter contained in the waste liquor can be recovered by fermentation processes, the immediate problem is to increase the output of pulp and thereby directly reduce the loss of wood substance. The waste liquors obtained in the sulphate or soda-cellulose factories can be treated by destructive distillation or by heating under high pressure to recover part of the organic substances in the form of acetone, methanol, acetic acid, oils, and tar.

## Hot Water Canning.

Disputed questions in canning by the hot water bath method have been solved as a result of an investigation lasting for two years carried out by the Home Economics Division of the Iowa State College in the United States.

During the experiments over 3,000 pints of vegetables and meats were canned at the college. The purpose of the experiments was to determine how long it is necessary to keep vegetables and meats in the boiling water bath when they are being canned.

Stringed beans which were canned under ordinary conditions and processed (in the boiling water bath) for two and a half hours, or longer, kept almost perfectly. Those processed for two hours did not do so well. For this reason, two and a half hours is recommended as most satisfactory for beans. The same held true for pint jars of Swiss chard, two and a half hours being recommended. Quart jars require thirty minutes longer.

Fresh tomatoes processed twenty minutes or longer kept perfectly, while those processed for a shorter time showed spoilage. Twenty-five minutes' processing time is recommended, adding five minutes as a factor of safety.

Asparagus and sweet corn did not keep uniformly well during any of the experiments unless acid was added. For sweet corn, two teaspoons of lemon juice should be added to each pint and the corn processed two and a half hours for pints and three and a half hours for quart jars. For asparagus, one and a half teaspoons of lemon juice should be added to each pint and the asparagus processed two hours for pints and two and a quarter hours for quart jars. In packing corn, use half as much water as corn, by weight, to facilitate the heat reaching the centre of the jar. Chard should also be packed with half as much water by weight.

Acid may also be used in canning chard and string beans at the rate of one teaspoon per pint. When using acid, process pint jars of string beans one and a quarter hours, quart jars one and three-quarter hours, pint jars of chard two hours and quart jars two and a half hours.

The importance of canning vegetables immediately after gathering was revealed by the experiments. Spoilage was twenty times as bad in string beans canned one day after gathering as in those canned immediately. Swiss chard showed similar results. Tomatoes which had stood two days had to be pro-

cessed thirty-five minutes to make them keep, and had five times as many bacteria as fresh tomatoes.

The importance of storing canned goods in cool temperatures was also revealed.

## Mesopotamian Dates.

Australian dried fruit growers suffering from the competition of Mesopotamian dates, of which about 4,000 tons are imported yearly, have asked for the duties to be increased. The cost of dates landed in Australia, duty paid, they say, is £35 a ton less 2½ per cent., whereas the production cost of raisins on a yield of 31 cwt. to the acre is £48, when delivered by rail in Melbourne.

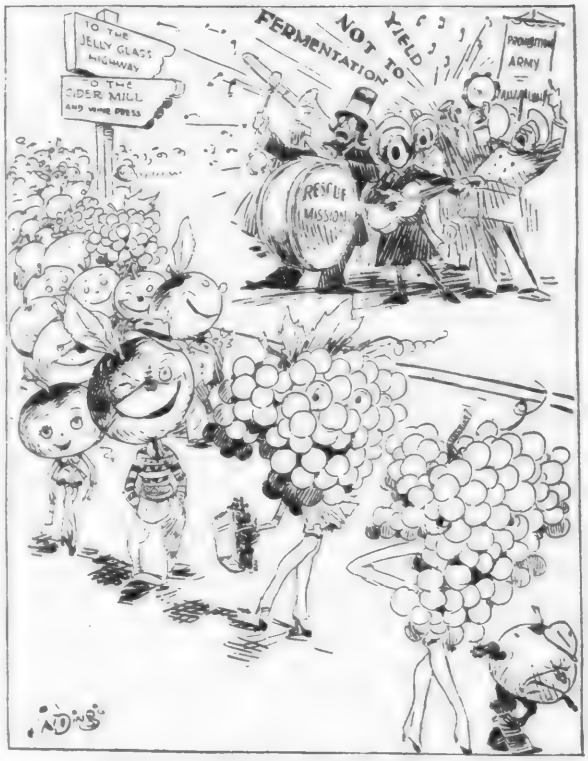
Referring to the drop in overseas wheat the Melbourne *Argus* says that generally prices compare with pre-war values. It adds that the outlook for the 1929 Australian crop is unfavourable. While the market is at present very depressed, it thinks some recovery is quite likely, but that the restoration of prices to those of three months ago is doubtful.

## Europe's Wheat Consumption.

In 1928-29 world shipments of wheat and flour to all destinations amounted to 116,000,000 qrs., the increase over the preceding season's total being 17,000,000 qrs. It is frequently stated when prices are depressed that this may be expected to bring its own remedy in an increased consumption, especially in Continental countries with depreciated currencies. Looking at the shipments during the past season to Europe one might get the impression that low prices have proved of very small attraction, for of 17,000,000 qrs. only 5,000,000 were taken by Europe, but when it is taken into account that Europe, excluding Russia, is estimated to have produced some 20,000,000 qrs. more than in 1927, it becomes obvious that the consumption must have been much heavier, which is remarkable in view of the fact that the European rye harvest was about 11,000,000 qrs. larger in 1928 than in 1927. Regarding the wheat shipments figures given it should be explained that the total for the past season covers 53 weeks, and the total for the extra week 1,060,000 qrs. The shipments to non-European countries last season were 28,120,000 qrs. against 16,380,000 qrs. in the preceding season, the increase being approximately 72 per cent. India's enormous purchases from Australia help to explain this, and the more settled conditions in China, combined with the famine over a large part of that country, are also contributory factors.

## The Canadian Pool.

The Canadian Pool has, of recent times, controlled as much as between one-fourth and one-fifth of the world's exportable wheat surplus, and, as U.S. farmers have discovered during the past year to their sorrow, the volume of exportable surplus has a good deal to do with determining the price of wheat. Therefore, while the controllers of from 20 to 25 per cent. cannot dictate prices, they must of necessity exert some appreciable influence on the market. The world price is in the end determined by the relation between the supply of wheat and the demand for




*Reprinted from the "New York Tribune."*

wheat, and the Pool can do no more than exert an influence, a fact which can be confirmed by an examination of the record of world production and the Pool's prices since its formation.

When the world supply is low, the tendency in Canada, as elsewhere, is for prices to be high and *vice versa*. In the crop year 1928-29, world production has been at least 200,000,000 bushels more than in 1927-28, being, in fact, the largest in history, which explains the current lower levels of wheat prices.

Farmers still deliver anything from 60 to 70 per cent. of their grain during September, October, and November. But it is no longer dumped in a frantic effort of scores of thousands of individual sellers to get the best possible price before the rapidly increasing supplies force the price down. In November of the last crop year, for instance, the Pool received 57,000,000 bushels, and, during the same month, it sold only 25,000,000. In the following March, when receipts were only 8,200,000, it sold 25,600,000 bushels.

**FOOD MANUFACTURE is sent to any address in the World for 10s. per annum. Send your subscription now to LEONARD HILL, LTD., Thanet House, 231-2, Strand, London, W.C. 2.**

# Openings for British Trade

*British firms may obtain the names and addresses of the persons or firms referred to in the following notices by applying to the Department of Overseas Trade, personally, or by letter (Development and Intelligence), 35, Old Queen Street, London, S.W. 1.*

*Applications for names and addresses must be sent to the Department of Overseas Trade, except where otherwise stated.*

**Provisions.**—An old-established firm of British merchants in Bombay desire to secure additional representation of British manufacturers of the above. (Ref. No. 318.)

**Food Products and Pharmaceutical Preparations.**—A Bombay firm wish to secure the representation of British manufacturers of these goods for the whole of India. (Ref. No. 319.)

**Beer.**—A firm of merchants and commission agents in Rangoon desire to secure the representation of a British manufacturer of beer for the Burma market. (Ref. No. 320.)

**Foodstuffs.**—A manufacturers' agent, with head office in Melbourne, at present on a visit to this country, desires to secure the representation of British manufacturers of the above goods and allied lines for the whole of Australia. (Ref. No. 347.)

**Green Tea.**—An agent in Fez desires to obtain the representation of British firms dealing in the above. (Ref. No. 342.)

**Foodstuffs (Jams, Teas, Specialities).**—A British commission agent established at Brussels is desirous of obtaining the representation of British manufacturers of the goods mentioned above. (Ref. No. 377.)

**Foodstuffs.**—A manufacturers' agent at present in the United Kingdom wishes to secure agencies for the above for the whole of India. (Ref. No. 350.)

**Dried Codfish.**—A firm of commission agents and manufacturers' representatives in Rio de Janeiro are desirous of securing British agencies for the above. (Ref. No. 345.)

**Canned Goods, Pickles, Dried Fruits, etc.**—A recently established agent in Montreal who was for twelve years with a Canadian firm of meat packers desires to obtain the representation for the Province of Quebec of exporters of provisions and groceries, such as canned goods, jams, pickles, dried fruits and nuts, on a commission basis. (Ref. No. 392.)

**Foodstuffs, etc.**—A firm of manufacturers' agents in Johannesburg desire to undertake the representation of British manufacturers of food products, confectionery, soft goods and textiles generally and small fancy lines likely to have a quick sale as novelties. (Ref. No. 395.)

**Condensed Milk, Dried Fish and Beef Products.**—A manufacturers' agent in British Guiana desires to obtain British agencies for the above. (Ref. No. 414.)

**Foodstuffs, Provisions, etc.**—An agent in Barbados desires British agencies on a purchase basis for the above-mentioned commodities. (Ref. No. 415.)

**Foodstuffs.**—An agent of good standing in Madrid wishes to get into touch with a British firm dealing in foodstuffs with a view to acting as their representative. (Ref. No. 429.)

# Trade News

IT IS reasonable to assume that there exist in every country prospective buyers of British goods, and it would appear that all that is necessary to increase the demand for British products is the provision of facilities for their exhibition, backed by an efficient selling organisation to demonstrate their advantages and utility.

With this object in view, British Trade Crusades, Ltd., has been incorporated, and this company has acquired a four-masted, twin-screw schooner of 1,000 tons burden which they have named *Crusader A*, and which, fitted up as a floating exhibition, will make a cruise lasting about 3½ years, during which all the principal seaports of the world will be visited.

The most serious problem in the undertaking——namely, that of languages—has been overcome by the introduction of an ingenious contrivance known as the "Proxyphone."

* * *

Messrs. Brierley, Collier, and Hartley, Ltd., of Rochdale, have issued a comprehensive catalogue of confectionery plant and general equipment. This remarkably bulky catalogue gives illustrations and particulars of everything in the way of machines and utensils likely to be required by the manufacturing confectioner. [This firm is prepared to submit designs for special machines and supply lay-out for new works or the rehabilitation of old ones.]

* * *

A small book describing the Foster instruments for the measurement of temperature by the optical and radiation methods is issued by the Foster Instrument Co., of Letchworth.

It often happens when the question of measuring high temperatures is under consideration that the user is in doubt which method to employ. Assistance in making this decision will be gained from this catalogue.

* * *

We have received an excellent brochure from Birmal Chemical Engineers, of Smethwick, entitled "Aluminium Plant in Welded Sheet and Cast Alloys."

The matter is admirably arranged in loose-leaf form for easy filing. Attention is particularly drawn to the merits of various alloys of aluminium, and it is stated that the difficulties of satisfactory welding of this metal and its alloys have been surmounted. Birmalite, for example, whilst retaining the resisting properties of the pure metal, is claimed to have greater mechanical strength and hardness, and is

(*Continued on next page.*)

# Current Literature

### Fruit and Vegetable Products

594. Determination of Sulphurous Acid in Apple Juice and Cider. Warsollier and Le Moal. (*Annal. Falsif.*, 22, 333-340.)

595. Utilisation of Cold Packed Fruits. Part I.: Strawberries and Raspberries. Fellers and Mack. (*Fruit Prod. J.*, 9, 1, 8-11.)

596. Freezing Storage of Citrus Products. Joslyn. (*Ibid.*, 13-15.)

597. The Preservation of Citrus Fruit Juices. Kokatnur. (*Ibid.*, 16-17.)

598. Testing Mayonnaise for Flavour, Colour, Consistency, and Keeping Qualities. Coughlin. (*Glass Packer*, 1929, Sept., 355-357.)

599. The Effect of Hydrogen Ion Concentration on the Toxicity of Sodium Benzoate. Cruess, Richert, and Tracy. (*Ibid.*, 362-364.)

600. Keeping up the Standard of Seeds. Observations in Pea Growing. Adams. (*Canner*, 69, 14, 11-13.)

601. Grape Beverage Investigations. Farley. (*Fruit Prod. J.*, 9, 1, 6-9.)

### Cereal Products

602. Composition of Corn. Link. (*J. Amer. Chem. Soc.*, 51, 2516-2522.)

603. Colour of Wheat Flour. Hardy, Cole, and Ricker. (*Ind. Eng. Chem.* [*Anal.*], 1, 151-152.)

604. Determination of Fermentative Power of Pressed Yeasts from the Point of View of Bread-making. E. and L. Elion. (*Bull. Soc. Chim. Biol.*, 11, 724-730.)

605. Effect of Dry Skim Milk on the Plasticity of Flour Suspensions. St. John and Bailey. (*Cereal Chem.*, 6, 140-150.)

606. Granulation of Flour and its Relation to Baking Quality. Kress. (*Ibid.*, 202-214.)

607. Correlation between Diastatic Power of Flour and Crust Colour in the Test Loaf and its Significance. Bliss, Sanstedt, and Platenius. (*Ibid.*, 121-127.)

608. Quick Viscosimetric Method for Measuring the Staleness of Bread. Karacsonyi. (*Ibid*, 241-243.)

### Dairy Products

609. Effect of Lupin-fish Meal on the Quality of Milk and butter fat. Mrozek, Schlag, and Eichstädt. (*Milchwirt Forsch.*, 7, 495-501.)

610. Detection of Animal Fat and Vegetable Ghee in Butter. Sanyal. (*Mem. Dept. Agric. India*, 10, 143-155.)

611. Blue Milk. Stocker. (*Milchwirt Forsch.*, 7, 332-339.) Determination of f.p. of Milk. Krenn. (*Ibid.*, 436-445.)

612. Optical Detection of Watering of Milk. Mundinger. (*Ibid.*, 280-291.)

613. The "Thybromol" Test for Detecting Pathological Changes in Milk. Roeder. (*Ibid.*, 365-435.) Water Content of Cheese. Teichert and Schlag. (*Ibid.*, 259-270.)

614. Metals in Dairy Equipment; Metallic Corrosion in Milk Products and its Effect on Flavour. Hunziker, Cordes, and Nissen. (*J. Dairy Sci.*, 12, 140-181.)

615. Spray Drying and the Drying of Dairy Products. Nyrop. (*J. S. C. I.*, 48, 136-139.)

616. Spontaneous Decomposition of Butter Fat. Mundinger. (*Milchwirt. Forsch.*, 7, 292-331.)

617. Milk Champagne. Kaiser. (*Deut. Nahrungsm.-Rundsch.*, 20, 158-159.)

### Various

618. Changes Produced in Eggs by Micro-Organisms. Pavarino. (*Annali Chim. Appl.*, 19, 266-272.)

619. Influence of pH of the White on the Keeping Quality of (Hen) Eggs. Sharp. (*Science*, 69, 278-280.)

620. Effect of Certain Salts on the Physical Properties of Ice-Cream Mixes. Hening and Dahlberg. (*J. Dairy Sci.*, 12, 129-139.)

621. Production of Caffein-free Coffee. Ihlow. (*Chem.-Ztg.*, 65, 629-630.)

622. Dextrin-fermenting Yeasts. Staiger and Glaubitz. (*Z. Spiritus Ind.*, 52, 243.)

623. Determination of the pH of Wines. Quartaroli. (*Annali Chim. Appl.*, 19, 253-254.)

624. Quality in Foods. Editorial. (*J. S. C. I.*, 48. 40, 952.)

625. Mechanically Refrigerated (Railway) Waggons. (*Nat. Provisioner*, 81. 10. 21-22.)

626. Safety Work in the Ice Industry. Rutland. (*Ice and Refrig.*, 77, 3, 137-138.)

627. Rapid Freezing and Chilling of Fish and Meats in Atomised Brine. (*Ibid.*, 155-156.)

628. Chocolate Blending. Whymper. (*Mnf. Conf.*, 9, 9, 58-60.)

629. A Study of Fruit Sorting. Harding and Manning. (*Jour. Nat. Inst. Ind. Psych.*, 4, 8, 423-432.)

630. The Licorice Root in Industry. Houseman and Lacey. (*Ind. Eng. Chem.*, 21, 10, 915.)

(*Continued from previous page.*)

used for refining or deodorising stills for edible oils. Birmabright is stated to be more resistant to corrosion than either the pure metal or any other of its known alloys, and is recommended for sugar, jam boiling, etc. The series of magnesium alloys called "Elektron" are also of interest in that they are very light to handle and, unlike aluminium alloys, are resistant to alkalis.

* * *

In the latest number of the *Sulzer Technical Review*, "New Problems in Connection with Boiler-feed Pumps" are illustrated with curves showing efficiencies and capacities. Articles follow on the Cold Storage of Eggs; Diesel-electric Power Stations in India, Egypt, and Roumania and Cold Stores in the Argentine amongst other subjects.

# Commercial and Legal News

*(The Editor does not accept responsibility for any errors which may occur in the following notices.)*

## London Gazette Information

### Joint Stock Companies

At the expiration of three months the names of the undermentioned companies will, unless cause is shown to the contrary, be struck off the Register, and the companies will be dissolved:

Amalgamated Vinegar Company, Limited.
All-Ox Meat Extract, Limited.
Pannier Pure Preserves, Limited.

### Voluntary Liquidations

*Voluntary liquidations may, in some instances, refer to companies in course of reconstruction.*

YEOVIL BEET SUGAR FACTORY, LIMITED. Resolved, August 26, that the company be wound up voluntarily, and that Mr. A. Wood, F.C.A., 6, Lancaster Place, Wellington Street, Strand, W.C. 2, be appointed liquidator.

COBDEN FLOUR MILLS COMPANY, LIMITED. Resolved, September 23, that the company be wound up voluntarily, and that Mr. E. J. Deane, 14, Dale Street, Liverpool, Chartered Accountant, be appointed liquidator.

HEDGE'S BREWERY COMPANY, LIMITED. Resolved, September 18, that the company be wound up voluntarily, and that Mr. E. Cross, C.A., 36, St. Mary's Gate, Derby, be appointed liquidator. Claims should reach the liquidator by November 23.

### Partnerships Dissolved

A. AND C. HORSLEY (P. Horsley and W. G. Bennett), Hop Merchants, 93 and 95, Borough High Street, S.E. 1, and carrying on business as Fustian Merchants, at 28 and 30, Lancaster Avenue, Fennel Street, Manchester, under the style of HORSLEYS AND COMPANY. Partnership mutually dissolved as from September 9, 1929. Debts will be paid by P. Horsley.

SCOTT, SIMPSON AND COMPANY (E. Milnes, J. C. Wilson, and R. C. Beevers), Mineral Water Manufacturers, Crystal Works, Drighlington, near Bradford, and Brunswick Works, Pudsey, near Leeds. Mutual dissolution as from March 28, 1929. Debts will be paid by E. Milnes, who continues the business.

### Bankruptcy Acts

*Receiving Order, etc.*

LINFORTH, OLIVER JAMES, 15, Whitcomb Street, Westminster, Mustard Merchant, lately residing at 43, Westbourne Park Road, Paddington. Receiving Order, September 25. Creditor's petition. Public Examination, 11 a.m., November 8, at Bankruptcy Buildings, Carey Street, W.C. 2. Adjudication, September 27.

## New Companies

C. A. GOYMOUR AND SON, LIMITED. (242734.) To take over the bus. of a baker and confectioner cd. on at Hatter Street, Bury St. Edmunds, as "C. A. Gowmour and Son." Nom. Cap.: £1,000.

BRITISH SACCHARIN MANUFACTURING COMPANY, LIMITED. (242761.) King William Street House, Arthur Street, E.C. 4. To carry on the bus. of mnfrs., importers, exporters, and refiners of and dlrs. in saccharine sugar and any similar substances, etc. Nom. Cap.: £100.

CHILLED SWEETS, LIMITED. (242371.) 558, King's Road, Fulham, S.W. 6. To carry on the bus. of mnfrs. of and dlrs. in cocoa, chocolate, and confectionery, etc. Nom. Cap.: £3,000.

BENNETT'S DAIRIES AND FARMS, LIMITED. (242381.) 6, Longsmith Street, Gloucester. To carry on bus. as indicated by the title. Nom. Cap.: £100.

ALEXANDER BETTER AND SONS, LIMITED. (242758.) 20, Soho Square, W. 1. To carry on the bus. of mnfrs., importers, and exporters of and dlrs. in preserved provisions, etc. Nom. Cap.: £100.

SIDNEY'S, LIMITED. (242507.) 6, New Burlington Street, W. To carry on the bus. of importers and exporters of and dlrs. in poultry, game, eggs, butter, etc. Nom. Cap.: £1,030.

WALTER ROBERTS AND SONS, LIMITED. (242454.) To take over the bus. of bakers, confectioners, millers, etc., cd. on at The Delph Mills, Brierley Hill, as "Walter Roberts and Sons." Nom Cap.: £3,000.

SUNYA, LIMITED. (242788.) 89, Scrubs Lane, Willesden, N.W. 10. To acquire the trade mark "Sunya"; and to carry on the bus. of mnfrs. of and dealers in fruit, fruit essences, etc. Nom. Cap.: £2,000.

THOMAS AND SON (EAST HAM), LIMITED. (242789.) 112, Plashet Grove, East Ham, E. 6. To carry on the bus. of wholesale pastrycooks and cake makers cd. on at East Ham by C. W. Thomas. Nom. Cap.: £800.

T. LAYCOCK AND SONS, LIMITED. (242554.) 68, Hopwood Lane, Halifax. To take over the bus. of bakers and confectioners cd. on by W. A. Laycock and C. Laycock. Nom. Cap.: £1,500.

J. W. BALMER AND CO., LIMITED. (242468.) To take over the bus. of a wholesale grocer and provn. mcht. cd. on at 35, Manchester Road, and Factory Brow, Preston, as "J. W. Balmer." Nom. Cap: £8,000.

HERBERT HIRTES, LIMITED. (242772.) Regd. October 5, 1929. 59, Green Lane, Ilford. To carry on the bus. of bakers, pastrycooks, and confectioners, formerly cd. on at 54, Browning Road, Manor Park, and 59, Green Lane, Ilford, by H. Hirtes. Nom. Cap.: £2,000.

HAMMERTON AND CO., LIMITED. (242810.) Regd. October 7, 1929. 42, Wharfdale Road, King's Cross, N. 1. To take over the bus. cd. on at King's Cross as "Hammerton and Co.," and to carry on the bus. of mnfrs. and dlrs. in confectionery and provisions, etc. Nom. Cap.: £2,000.

TOM CLARK'S PICKLES, LIMITED. (242907.) Regd. October 10, 1929. 58, West Street, Brighton. To take over the bus. of a mnfr. of pickles, and in connection therewith the bus. of a sauce mnfr. cd. on at Mile Oak Road, Portslade, by T. Clark. Nom. Cap.: £7,000.

DAMENEZ, LIMITED. (242570.) Regd. September 27, 1929. 62, Frith Street, W. 1. To carry on bus. as mchts., importers, and curers of and dlrs. in Russian and other caviar; mnfrs. and importers of and dlrs. in Russian and genl. produce and table delicacies, etc. Nom. Cap. £100.

SNELLING AND CO., LIMITED. (242552.) Regd. September 26, 1929. 17, Philpot Lane, E.C. 3. To carry on the bus. of produce brokers' and packers' representatives, canners, packers, and preservers of provisions, etc. Nom. Cap.: £1,000.

EMPIRE DAIRIES, LIMITED. (242653.) Regd. September 30, 1929. To carry on bus. as indicated by the title. Nom. Cap.: £50,000.

SEFTON CONFECTIONERY CO., LIMITED. (242646.) Regd. September 30, 1929. To carry on bus. as indicated by the title. Nom. Cap.: £1,000.

## Forthcoming Exhibitions

*November* 19–28.—Newcastle Grocers' and Allied Trades' Exhibition. Apply to Provincial Exhibitions, Limited, City Hall, Manchester.

*November* 21–30..—Kent Bakers', Confectioners', and Allied Trades' Exhibition. Canterbury Drill Hall. Apply to London and Manchester Exhibitions, Limited, Philos Chambers, Oxford Road, Manchester.

*January* 14–23.—Leeds Grocers' and Allied Trades' Exhibition. Apply to Provincial Exhibitions, Limited, City Hall, Manchester.

*January* 14–25.—Birmingham Grocers' Exhibition. Apply to A. Hemingsley, Esq., 207, Daimler House, Paradise Street, Birmingham.

*January* 17–25.—St. Helens Health and Hygiene Exhibition. Under the County Borough's Health and Education Committee. Apply to London and Manchester Exhibitions, Limited, Philos Chambers, Oxford Road, Manchester.

*February* 6–15.—Berks County Bakers', Confectioners', and Caterers', and Allied Trades' Exhibition, in the Town Hall, Reading. Apply to London and Manchester Exhibitions, Limited, Philos Chambers, Oxford Road, Manchester.

*February 27–March* 28.—Gloucestershire Bakers' and Confectioners' Exhibition. Cheltenham Winter Gardens Pavilions. Apply to London and Manchester Exhibitions, Limited, Philos Chambers, Oxford Road, Manchester.

*March* 4–15.—Scottish Bakers' and Grocers' Exhibition. Glasgow. Apply to C. Sommerville, Esq., Kelvin Hall, Glasgow.

*March 27–April* 5.—Brighton and Hove Grocers', Bakers', Confectioners' and Caterers' Exhibition. Under the auspices of the Brighton Master Bakers' Association, in the Dome and Corn Exchange, Brighton. Apply to London and Manchester Exhibitions, Limited, Philos Chambers, Oxford Road, Manchester.

*April 29–May* 8.—Grocers' and Allied Trades' Exhibition. Manchester. Apply to H. Burns, Esq., 392A, Corn Exchange, Fennel Street, Manchester.

## Abstract of Paper read before the Society of Public Analysts, on October 2nd, 1929

*The Composition of Irish Winter Butter.* By P. S. Arup, M.Sc., F.I.C.

Analyses are given of 580 undoubtedly genuine samples of butter obtained from creameries and agricultural schools in the Irish Free State during the winters of 1927-28 and 1928-29. In the former period, 50 samples showed Reichert-Meissl values below 24; in the latter period, 88 samples. In places where calving was not confined to one season of the year (as is generally the case in Ireland), and also where the conditions of feeding and shelter were superior, Reichert-Meissl figures below 26 were not obtained. Similar effects were noted with regard to the Polenske values. The conclusion that the Avé-Lallemant value cannot be accepted as a criterion for distinguishing between adulterated butters and genuine butters with a low Reichert-Meissl value was confirmed.

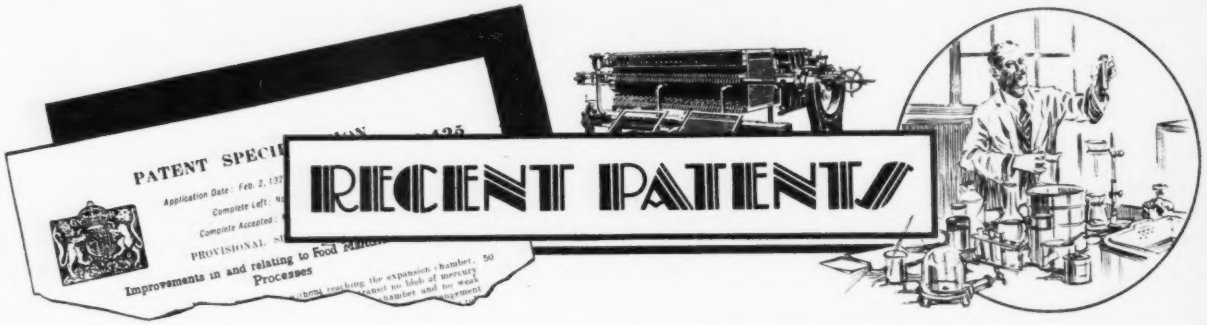
(*Continued from p.* 326.)

these faults, which is what his pronouncement might seem to imply to the ordinary unscientific mind. He does, indeed, somewhat qualify his opinion by saying "that no can is so perfectly tinned that no iron is exposed and no can is so perfectly enamelled as to prevent both iron and tin being exposed." Obviously this implies that the nearer we can attain to relative perfection in these two details, the less the danger from corrosion.

Mr. Morris, of the Cambridge Low Temperature Station, pertinently points out that "double lacquering is undoubtedly the most effective and convenient remedy known at present to obviate discoloration." It is also his opinion that lacquered cans, by preventing discoloration, "far outweigh in importance any deduction in the number of hydrogen-swells and perforations which might occur" through the use of plain cans, and he is clearly of opinion that coloured fruits should be packed in lacquered cans, despite occasional trouble from perforations.

In conclusion I again claim that the more we improve our tinplate, our lacquer, and the methods of applying it, and also our system of canning, the less we shall hear of swells and perforations.

That British canners have done this, and are continuing to do so, is, to my lay mind, a striking proof of my contention of the superiority of British canned fruits over all foreign importations.




*These particulars of New Patents of interest to readers have been selected from the Official Journal of Patents, and are published by permission of the Controller of H.M. Stationery Office.*

### Latest Patent Applications.

29798. BRADLEY, E. J.: Machines for securing sealing-covers for pickle, etc., jars. Oct. 2.

30284. HELLERUD, R.: Preservation of milk. Oct. 5.

30285. HELLERUD, R.: Manufacture of milk products. Oct. 5.

30104. HOUGHTON, J., AND SMIT, H.: Manufacture of biscuits, etc. Oct. 4.

29987. MCCALL, C. H. G., AND MCCALL AND CO., LIMITED: Tins for comestibles. Oct. 3.

### Specifications Published.

319,641. DISTILLERS CO., LIMITED, BENNETT, W. G., AND PEAKE, A. M.: Treatment of molasses for yeast growth.

294,903. SEIDEL, F., AND GIANI, A.: Process and apparatus for preserving liquid nutriment such as milk and the like.

310,492. CLAUSS, W. F.: Egg preserver.

319,376. EWART, H. D.: Extrusion press and cutter for butter and like substances.

302,332. PAFFGEN, J.: Process of and apparatus for removing caffein and unsavoury substances from roasted coffee.

*Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C. 2, at the uniform price of 1s. each.*

### Abstracts Published.

317,554. **Vitamins.** SCHMITT, C., 8, Bruckenkopfstrasse, Heidelberg, Germany.

Vitamins are extracted from cotton-seed, which after removal of the oil is ground finely and leached out with water without boiling. The extract may be added to milk, butter, cheese, margarine, wine, beer, cocoa, chocolate, sugar, dried milk or cream, materials for making baked articles, etc. The solution of the meal itself may be employed in curative baths. The extract may be mixed with alcoholic liquids or oily vehicles for cosmetic purposes. The meal may be extracted with wine, beer, or other liquor. The water extract may be fermented with yeast.

316,597. **Glycerine and alcohol.** MARKS, E. C. R., 57, Lincoln's Inn Fields, London.—(Du Pont de Nemours and Co., E.I., Wilmington, Delaware, U.S.A.)

*Fermenting.*—Alcohol and glycerol are produced by fermentation with yeast of a solution of sugar, to which the incinerated ash of a fermented mash or the soluble potassium salts extracted from said ash are added, preferably in successive doses, while the mash is in a state of vigorous fermentation. Thus a blackstrap molasses mash is subjected to a straight alcohol fermentation, a mixture of potassium salts contained therein is recovered and added to a further molasses mash to promote the formation of glycerol therein, and the potassium salts are again recovered and used. When molasses are replaced by commercial cane and beet sugars, etc., a molasses ash may be used to promote the formation of glycerol. The preferred species of yeast used is that described in detail in Specification 316,567.

317,664. **Bakers' hot plates.** JAMIESON, J. S., IIA, Arden Street, Edinburgh.

317,371. **Closures for milk cans, etc.** KRUPP AKT-GES., F., Essen, Germany.

## Recent Trade Marks

*This list of Trade Marks of interest to readers has been selected from the "Official Trade Marks Journal," and is published by permission of the Controller of H.M. Stationery Office.*

**FRICO**

505,276. **Butter, cheese, and casein (for food).** FRIESCHE CO-OPERATIVE ZUIVEL-EXPORT-VERIENIGING, Willemskade 47, Leeuwarden, Holland. Oct. 9.

**YALADOR**

505,498. **Maté for making a beverage.** SCHALBURG AND CO., LIMITED, Bank Chambers, London Bridge, London, S.E. 1. Oct. 2.

**ORMO**

501,826. **Biscuits, cakes, and chocolates.** ORMEAU BAKERY, LIMITED, 307, Ormeau Road, Belfast. Oct. 2.

**IROCA**

504,335. **Butter.** IRISH ASSOCIATED CREAMERIES, LIMITED, 9, Leinster Street, Dublin, C. 17. Oct. 2.